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NEWS IN BRIEF

Takeover of Dictaphone

ANOTHER giant firm in the office systems business is being formed by the takeover of Dictaphone Corp by Pitney-Bowes, the maker of postage meters and office machines. Pitney-Bowes is to pay \$120.4 million for the dictating machine company, producing a combined concern with an annual turnover of approaching \$1 billion.

Dictaphone will continue to operate under its present management and name, as a subsidiary of Pitney-Bowes. It will bring with it considerable on-going development work in the field of the "electronic office," at present including voice digitising, voice recognition and dictation management (CW, November 2, 1978).

ICL pay rise

WITH pre-tax profits of £37.5 million (CW, December 21/28) overall payments of 10.0% on basic rates have been paid to ICL workers who, according to the terms of last year's self-financing productivity scheme, ICL's financial year ended in September and the final quarter bonus was 2.5%.

Bankrupt

THE Norwegian state-owned Lundberg consumer electronics, instruments and computer peripherals company has been declared bankrupt, but it is hoped that parts of the company will continue in business. The Norwegian government withdrew an offer of £5 million additional support when it learned that substantially more money would be needed to avoid bankruptcy.

"That means that we must make the new machines easier to use, more reliable, and include more debugging aids in hard-

The Staff of CRANFIELD COMPUTER SERVICES LIMITED

104 PARK VIEW ROAD - WELLING - KENT DA16 1SJ
Telephone: 01-304 8326
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A VERY HAPPY CHRISTMAS AND A PROSPEROUS NEW YEAR

CRANFIELD PUTS THE CUSTOMER FIRST



A MEMBER OF THE CRANFIELD GROUP OF COMPANIES

Surprise entries in software Honour Roll

A LARGE number of old favourites have been joined by some surprising new entries in Datapro's 1978 software Honour Roll, the US user survey.

Compiled this year from nearly 6,000 user responses, the annual Datapro software survey reported on 260 packages. Of these, just 30 met the stringent requirements for inclusion in the Honour Roll.

Last year, 32 products were recognised. Ten of those have been dropped this year, leaving a core of 22 with at least two consecutive years in the Roll.

Five of the packages have now been included in all of the six years that the list has been published. These include ADR's The Librarian, Pansophic's Panvalet, SDI's EPAT and the Disk Utility System from Westinghouse.

Two programs, Fast/Dump/Restore from Innovation Data Processing, and Syncsort from Whitlow Computer Systems have now

appeared in five consecutive years.

And three products featured for four consecutive years include Westinghouse's West! and Computer Associates' CA-Sort, though the latter first appeared in the Honour Roll under the name PanSort when the US licence was held by Pansophic.

While Westinghouse is only one of several firms to have two products in the Roll, its UK operation, Westinghouse Management Systems, has the distinction of being agents for six of the Honour Roll packages.

In addition to the Westinghouse products West! and Disk Utility System, the company handles File/Film and FAQs, both developed by Gant Systems, Innovation's FDR, and Quik-Job developed by Systems Support Software Inc.

Most surprising omission from the 1978 Honour Roll is SDI's Grasp, which had previously been one of the elite packages featured every year since the Roll's inception.

Image/3000 database for the 3000 series, Packages appearing in the Honour Roll for the first time include Univac's BEM (an interactive Basic Editor Monitor for OS/3), and Goal System's Faqs partition balancer for DOS/VS, IBM's 360/370 RPG compiler.

Traditionally dominated by utility software, the 1978 Honour Roll is notable for the growing place taken by much larger software systems. The list includes two DOS-replacement operating systems, two TP monitors, and three DBMSs.

Packages appearing under these categories for the second or subsequent time were EDOS from the Computer Software Company (2nd year), West!, Cullinane's IMS (3rd year), and Software AG's Adabas (2nd year).

New entrants in these categories include Altergo's Shadow II (the first UK-developed product on the Roll) and Hewlett-Packard's

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approaching \$1 billion.

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Univac plans for the '80s

A BACK-END database system using relational techniques, natural language input and output, higher capacity disc drives and 5,000 gate self-checking chips, are just a few of the developments under way at Univac for the computers that will begin to appear in the mid and late 1980s, according to Dr Barry Borgerson, the company's director of research and technical planning. Univac currently spends \$150 million a year on research and development.

"In general, I see a growth in the attachment of specialised units to mainframes; things like array processors and database processors," Borgerson told Computer Weekly in an exclusive interview.

"Natural language voice input and output is already available in a primitive form, with a large front-end unit, but present-day systems need to be tuned for each user," he said.

"We are working on a database backend which will be a combined relational and network database, with the common feature microcoded, it will keep the same DMS-1100 interface, but will offer greatly improved performance," he said.

He sees processor costs falling steadily. "The requirement facing us is to increase the functionality of the equipment we sell, at the same price to the end-user as he is paying for today's machines."

"That means that we must make the new machines easier to use, more reliable, and include more debugging aids in hard-

ware, so that the user is paying a constant rate of money, but is getting more capability for his investment."

The principal technologies that Univac is working on for very-large-scale integrated circuitry are short-channel NMOS and Silicon on Sapphire, SOS-C-MOS.

"The front-ends can be made much smaller, and the tolerances to different voices can be greatly widened. Big programming jobs will still be done using procedural languages, but applications like airline reservations and goods ordering would be appropriate for voice systems."

He does not see a threat from bubble memories to large capacity moving head disc drives, although he believes they will probably take over from fixed-head disc drives and floppy discs.

"We are looking at thin-film disc heads using semiconductor techniques, with a much smaller gap between the head and the disc surface. Drives with multiple arms and multiple heads on each arm are also likely," he said. "The amount of information stored could also be increased by the use of better

coding techniques, using ternary rather than binary arithmetic to get more data in a given disc space."

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Ten
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ago...

COMPUTER WEEKLY

JANUARY 9, 1969

SCICON introduced Umpire,
its mathematical computing package.

The Selsic group ordered a sophisticated management system from Burroughs, worth £1,100,000. It was disclosed in Parliament that the use of computers had lengthened the time in dealing with claims to the Department of Employment... Nabisco Fingers, the biscuit company, launched a pilot scheme for a full stock control and distribution system... A new core memory system, the ICM-42, was made available by Honeywell... The BCS carried out a survey on computer aided production control.

COMPUTER REVIEW

Beware of
pi in the
sky worshipHow to build
on success
of BCS 79

In a brilliant speech that sparkled with a clarity of thought and sharpness of wit that is rare on the computer punditry scene, Murray Laver last week got the BCS annual lecture series off to a great start (see page 3).

Under the title "The significance of computing", Laver ranged across a wide spectrum of systems and social-impact-of-computers issues. And he highlighted one particularly important aspect that is seldom mentioned, the worship of numbers, which he called "a preposterous heresy, numerology".

Laver rightly explained that computing tends to give a false importance to numerical facts. "This not only widens the gap between the numerate and the majority," he added, "but has encouraged some of the semi-numerate to espouse numerology, the idolatrous worship of numbers; an unwholesome version of pi (sic) in the sky."

Numerology, he continued, is spawned by the common confusion between precision, accuracy and significance. The second remedy is "to distrust any numerical fact that appears in public without an accompanying statement of its probable error: this copes with chronic dislocations between precision and accuracy and can be particularly efficacious when applied to the monthly trade figures."

Laver's third nostrum is "to consider what action you are obliged to take when the extremely right-hand digit of some statistics change by plus or minus 1 and then successively cut off right-hand digits until the action becomes important". This, claims Laver, can be a "sovereign remedy for inflamed significance and can be applied daily to the Stock Exchange share index".

In this case, as Laver stressed, the convention is understood and no social problem arises. However, he added, "each day the mass media report commercial and economic facts, such as trade figures, whose probable errors span at least the last digit or two of their quoted value and whose significance may be low, if not zero. The media then proceed to analyse the transient and meaningless fluctuations of these figures with great solemnity."

"That these quantities often emerge from expensive computers lends their specious precision an air of authority and

significance in no way justified by the accuracy of the primary data."

Laver then prescribed three remedies for any who suffer the odd twinges of numerology, and Computerview commends them to our more susceptible readers.

The first Laver remedy is "to treat facts as if they really were the independent, neutral things they seem to be when they emerge from an incorruptible machine.

"We are occasionally urged to let the facts speak for themselves," he explained, "but this is what they cannot do because, as playwright Pirandello once said,

A fact is like a sack, which won't stand up when it is empty."

To fill it we need to understand why, how and for whom it was defined and collected as it is, and exactly what processing went on before we were allowed to see it.

"Unless we stay on guard we may build a susceptibility to data illusions into our information systems, and that would be a highly significant result of our increasing dependence on computing," he concluded.

This warning about numerology, together with its cures, is of relevance both to systems builders and users, and Murray Laver is to be thanked for expressing it so well.

Congratulations are also to be given to the BCS 79 organising committee for providing the first platform for the new series of BCS annual lectures and for choosing the inaugural lecturer so wisely.

The whole UK computing community is indebted to the BCS 79 organising committee, under the chairmanship of Andrew Hinckley, and the Fun Fair

FOCUS

DPM's future indefinite

IT did not require posters, wall or otherwise, to proclaim last year's message that "the future for DPM management was bleak". Writing on the installation walls strongly suggested that the demise of the DPM was imminent and possibly long overdue.

In the past, the DPM has stayed off many marauding aggressors. The company accountant or secretary were early plunderers as were keen computer salesmen. Consultants then had a go at usurping the DPM's role, closely followed by facilities management and turnkey operators. Also to be found beating on the installation door were large-scale service bureaux and software houses.

Each and every assailant presented a competitive and persistent challenge.

This year, it could well be the year of the user. Minis and micros are now becoming standard features of many user departments, with software packages being available "off-the-shelf". In many other areas, computer systems are being distributed far and wide — at least as far as the Post Office modem will permit.

The gloom and doom theme was further hammered home at a recent IDPM Central London branch meeting. The guest speaker was Alan King, management services manager of Lyons Maid, noted knocker.

Contributions from readers are welcome — we will pay £10 for each howler that we print.

Computers now spend more time for the phone each day than any human telephone addict — deleting such vital questions as

SATURDAY, January 6, is likely to go down in UK computing history as a turning point in the relationship between the computing community and the rest of society, as well as being a milestone in the development of society for so long. This should also be a special word of praise for Hinckley, for we also a prime mover and organizer of the ACM/Computer Weekly Hedsor Park meeting July 1977 on the impact of information technology on society.

Hinckley, . . . breaking down the barricades of fear. See "How to build on success" on page 3.

A related risk of numerology highlighted by Laver is "to treat facts as if they really were the independent, neutral things they seem to be when they emerge from an incorruptible machine.

The first Laver remedy is "to report on rising, and after meals, the formula: 'Remember Monday Friday'. This serves to remind the patient that the only numbers to be found in natural or human phenomena were left there by some man, who has put his foot in it. Quantitative facts are not the most important, only the easiest to calculate with."

The second remedy is "to distrust any numerical fact that appears in public without an accompanying statement of its probable error: this copes with chronic dislocations between precision and accuracy and can be particularly efficacious when applied to the monthly trade figures."

The third nostrum is "to consider what action you are obliged to take when the extremely right-hand digit of some statistics change by plus or minus 1 and then successively cut off right-hand digits until the action becomes important".

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LORD PEART TELLS OF REAL CHALLENGE FROM INFORMATION TECHNOLOGY

Non-use is greatest threat, BCS 79 told

THE failure to use information technology to increase the UK's economic and industrial competitiveness poses a far greater threat to employment than the possible increase in unemployment caused by use of the technology, according to the Lord Privy Seal, Lord Peart, and Duncan Davies, the chief scientist and engineer in the Department of Industry.

by others and there will be a need for mobility and flexibility in taking up new jobs. Action will be needed to ensure that individuals do not suffer avoidable hardships.

The government has an obligation to ease these transitional difficulties as far as possible. Part of the solution lies in training and retraining. If, in addition, special employment measures are needed to make full use of the device's capabilities.

greatly lengthen the "substitution" timescale for other products.

Calculators, he explained, were complex devices but most of them were bought because they were so cheap. People believed they ought to be useful but very few calculator users made — or needed to make — full use of the device's capabilities.

The government has an obligation to ease these transitional difficulties as far as possible. Part of the solution lies in training and retraining. If, in addition, special employment measures are needed to make full use of the device's capabilities.

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The role of the PR profession

Soothsaying Teddy Bears

OUR Artificial Intelligence guru, Professor Donald Michie, has just returned from the US with news of the latest application there of microprocessor technology — the Executive Teddy Bear. This provides flattery on demand, by means of a voice synthesiser.

The harassed executive presses its belly button and out comes a random selection of soothing phrases from its digital memory — "You're wonderful... You're the Tops ... Steve McQueen watch out" — and so on. Apparently the technology is so advanced now that one or two thousand phrases can be stored easily.

Leading on from this, Michie is certain that the next development in micro-controlled consumer products is going to be in sex. Now that we've had computer games, he says, we must shortly be seeing the

Mind you, it gives a whole new significance to bugs in the software.



Serpentine logic

A READER has sent me this rather sad story:

A Russian friend has spent many years in this country but still finds the language difficult. He also makes the study of computers his hobby and prides himself on the speed with which he can solve problems.

Last year he took his sons to the Schoolboys' Exhibition, where they saw a computer on display. "Solve a problem in less than 80 seconds and win a Pet," said the notice on the stand.

Thinking how wonderful it would be to own a Pet computer, Ivan set to work and solved the problem in less than 80 seconds, a record for

the day. "Right, now which pet would you like — a canary or a grass snake?" asked the demonstrator.

"It would have cost me at least £3 to house the canary properly," said our friend later. "I did the only thing possible, chose the grass snake and raffled it."

In the know

YOU may think privacy is a crashing bore, but I will have you know that when the Canadian Human Rights Commission advertised for staff, they got 8,000 applications. Of these, 2,000 wanted to be privacy inspectors. The Commission has been seriously held up in getting down to its job by having to sift through all these applications. Is it cathis of me to suggest that some of these people may be interested in privacy because they have a teeny weeny inclination to find out about other people's private affairs?

The PR man makes sure that the message does get across. He acts as the official voice of the company in telling the Press that the product has been launched and in defining its capabilities, qualities and virtues. He helps to ensure that journalists covering the launch get all the information they want; and puts them in touch with the various technical

MIND GAMES

The world's largest range of over 3,000 games and puzzles — a fascinating selection in which skill and aptitude, not luck, is the major determining factor. Part of the game section will play a part. Role-playing fantasy games. War games of all sorts. Abstract games, Books and Magazines. Write for FREE Catalogue to Games Centre (CW10), 16 Hanway Street, London W1. Tel: 01-580 0278. Also at 2 Conduit Street, Knightsbridge, London SW1 5AS (01-580 8488). Personal shopping service: come to both branches or order by post from W1 Centre.

Neither liars nor censors

Intelligent Sex Toy. After all, if a micro can provide verbal flattery, why not physical flattery as well? Something along the lines of a micro-controlled life-size inflatable rubber doll — how does that grab you?

Don't ask me how this would actually work, but I'm sure some backroom boys will come up with something soon. The ingenuity of capitalists when faced with a money-spinning idea knows no bounds.

And remember, we're always being told that it is the applications of micros, rather than their manufacture, that is important for Britain, so I trust the MAP people are bemoaning away on this, as I'm sure they are at Grimbleton Down. At last, something for Britain to lead the world in!

Mind you, it gives a whole new significance to bugs in the software.

IT was a bitterly cold autumn night. The witching hour was approaching, and my last meal was a distant memory. I was standing with a group of other similarly cold and starving journalists outside a shut and deserted Venice airport, waiting for the river taxi which the public relations man had promised was on its way.

It took about an hour for the taxi to arrive. At the end of that time, morale was very low indeed; feelings about the poor individual responsible for the delay were correspondingly running very high.

It would have taken a very brave or a very stupid man to have canvassed the assembled multitude for an opinion of the Public Relations profession.

The moral of this story is that one should never ask a journalist for a considered opinion of PR people. Flak is likely to fly. One intrepid PR man has, however, asked me to do just that, and my editor thinks it a good idea.

So I'm going to make the attempt.

For the purpose of this article, I shall restrict discussion of the PR executive's role to the question of Press relations. Much of what I shall say nonetheless applies to public relations in general.

What does the PR function involve? For many, PR conjures up a vision of some kind of drunken lout (no sex discrimination intended); I just can't think of a suitable female alternative to lout) whose lot in life is to tell lies about the organisation he represents.

For others, perhaps prospective employers of PR expertise, the view is of somebody who — by exercise of charm, willpower and if necessary some form of direct or indirect bribery — will exert tight control over what the Press says about the organisation in question.

Both points of view are gross distortions. The PR profession has an important role, in which dishonesty and corruption seldom play a part. A good PR person performs a valuable service for his organisation, for the Press, and for the community in which he works in general.

That may sound like a piece of PR in itself. In fact it is not; I have never been a PR man, and have no idea what the Institute of Public Relations has to say about the profession it represents. What I have to say derives solely from my experience as a journalist.

And this is not merely of academic interest. Most readers will be unaware of the thinking which underlies editorial policy, but they will be affected by it nonetheless. They will find they prefer one paper to the other, find one of them very informative and the other a good read on the train.

If one looks at the monthly publications, the differences are even greater. Data Processing and Systems, for example, differ not just in content and style, but in the readership they are appealing to, as well.

All this information is essential to a Press officer. If he has a news story of interest, or an article for publication, it may well be most suited to one particular publication. With some news stories, it can be more desirable to achieve a lot of coverage in one publication, and none in the others, rather than a brief mention in perhaps three or four of them.

With articles, the more appro-

priately they are placed the more likely they are to be read and appreciated. Specialist knowledge can therefore greatly improve both the quantity and the quality of coverage an organisation gets.

There are two common ways of doing this. One is the Press release — that is, an announcement by post. For most products this is the most effective method. But for some which are of more than usual interest, a Press conference is arranged. This is much more expensive, and from a journalist's point of view much more time-consuming, but if the product is particularly technically innovative, or represents an important advance for a large number of computer users, then the extra investment can be well worthwhile.

It would have taken a very brave or a very stupid man to have canvassed the assembled multitude for an opinion of the Public Relations profession.

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This leads me to another cardinal offence: failure to return a call after promising to do so. It is tempting for a Press officer to do this as the easy way out of a tricky question. But it is counter-productive. One small-frame manufacturer is infamous in journalistic circles for this — and I believe it is no coincidence that that manufacturer has agreed to give up the quality of Press coverage.

There are people who regard the PR man's role here as purely negative, that of preventing adverse stories from getting published. This is not the case. PR people have no such power. It is the journalist's responsibility to decide the strength of a story and the shape of a story, and the editor's to decide whether it should be published. The PR person is responsible only for ensuring that the journalist is fully informed.

Management's attitude to PR does, of course, have a big impact on the quality of the results achieved. To get the best out of PR, it is essential that the PR man be well informed about all the company's activities, not just those which management wants publicised.

The best way of achieving this is to place responsibility for PR with a top level executive such as the marketing director.

As an aside, I have found the many companies are afraid of "unfavourable" stories appearing about them in the Press, to the extent even of wishing to make minor changes in phraseology. In my experience, this sensitivity is totally unnecessary. Stories of criminal negligence, malpractice and fraud are obviously to be avoided; but, in general, any publicity is good publicity.

Now that, from a journalist's point of view, is one of the ultimate crimes.

Action was taken. For some months afterwards, stories concerning that manufacturer were not checked with the Press officer. This made no difference to the accuracy of the stories (other means of checking the facts were adopted).

It did mean that the manufacturer's point of view did not get a hearing (and a chance to influence the formulation of the report) until the following week, if then.

As well as making positive efforts to disseminate information, the PR man is involved in responding to queries from outside his organisation, especially from the Press. This involves putting enquirers in touch with the appropriate person, ensuring that people get the correct information.

And this is not merely of academic interest. Most readers will be unaware of the thinking which underlies editorial policy, but they will be affected by it nonetheless. They will find they prefer one paper to the other, find one of them very informative and the other a good read on the train.

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MBE for man who pioneered training of blind programmers

BEHIND the announcement of the New Year's Honour award of the MBE to Geoffrey Bull, of BP Oil, lies a considerable story of work for the community and for his colleagues. Geoffrey, who has been blind from an early age, joined Shell-Mex BP, as it was then, in 1967 after taking part in the first course to train blind

people to be programmers (CW, March 23, 1987). He joined the company, which was then the marketing operation for Shell and BP, at its Hemel Hempstead Computer and Accounting Centre, and when the organisation was split up he remained with BP Oil. Geoffrey has been a project leader for some time and is now part of a

team working on the development of a management information system. He is also a staff representative on the company's pension fund consultation council and on the board of BP Oil Trustee Ltd, which administers the funds.

A member of the executive council of the Royal National Institute for the Blind, Geoffrey is a keen sportsman and has taken a leading part in developing sporting facilities for the blind and disabled. He is also on the executive council of the British Sports Association for the Disabled and last year was chairman of the British Association for Sports and Recreational Activities for

the Blind. Shell Mex was one of the first companies to take part in the scheme to train and provide jobs for blind programmers and Geoffrey has two blind colleagues, Gerald Aherne, who was with him on the first course, and John Farley. They are both senior programmers.

GCS to market Quantel in the UK

BACKED up by a large and well-established maintenance force located all over the country, General Computer Systems has introduced the Quantel family of small business computers to the UK market. Built by the Quantel Corp of Hayward, California, more than 2,000 of the systems have been sold over the last four years, mainly in the US.

The Quantel family consists of three ranges of modular systems, the 200, 900 and 1400 series, which are compatible in both hardware and software terms. The smallest 200 machine comes with a 48K byte processor and 1.3 million characters of floppy disc storage, while the biggest 1400 system can have a one Megabyte main memory, 600 Megabytes of disc storage and up to 64 display terminals.

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The best way of achieving this is to place responsibility for PR with a top level executive such as the marketing director.

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Chinese place \$69 million contract for Cyber 170s

THE biggest computer contract yet placed by the Chinese government has been awarded to Control Data. Worth \$69 million, it is for a dozen low-end models in CDC's large-scale Cyber 170 line and is subject to CoCom approval. The Cyber 170s are wanted for geophysical exploration, and will join two

Univac view of the 1980s

UNIVAC managing director Bill Read will present the company's view of Computing in the 1980s at the Waldorf Hotel, Aldwych, on Thursday, January 18.

The British Computer Society London branch will hear Read's views on the effects of advances in

technology, the response of users, and the pressure that plug-compatible manufacturers are increasingly exerting on large mainframe manufacturers.

The meeting, which starts at 6 pm, is open to non-members.

GTE to acquire Telenet for \$59m

COMMERCIAL packet services pioneer Telenet Corp, the company which will supply the hardware for the UK Post Office PSS Packet-Switched Service (CW, November 30), is to be acquired by GTE. The deal, already foreshadowed (CW, October 5), has now been confirmed by GTE; the bid, in GTE shares, values Telenet at about \$59 million.

Telenet is a so-called "value-added" carrier, leasing lines

from telephone companies

principally AT&T, and offering high-level packet-switched services to customers. GTE is a diversified communications and electronics company and the second-largest US telephone service company after AT&T.

The acquisition would enable GTE to compete with AT&T's planned ACS Advanced Communications Service, formerly known as the Bell Data Network.

2200 MVP.



Taking on the Russians

A BRAVE man is Peter Ellis, deputy managing director of ICL, as he takes on Russian Grandmaster Evgeny Yash

OP SPOT

By Bernard Allen

In at the deep end—TOPS gives practical experience

AFTER some eleven weeks on the Training Opportunities Scheme's operations course at Borehamwood College, the students leave the security of the classroom and go out to various sites where they are thrust into the complicated, busy and often hectic environment that is computer operations.

They spend three weeks working with experienced operations staff, seeing what the job entails and learning how the operations department functions.

The work they do during this period depends, largely, on the size and nature of the jobs processed at the installation, and the staff of the site.

Both David Townsend and Steve Ward were extremely pleased with the practical

When Bernard Allen first interviewed Steve Ward and David Townsend, they were four weeks into a fifteen week long Training Opportunities Scheme (TOPS) operations course at Borehamwood College, in Herts.

Now, as they have just completed a three-week practical block and are at the end of their course, Bernard speaks to them again in order to discuss their progress.

training they had been given, as they told me when I visited Borehamwood College on the second-to-last day of their TOPS operations course.

Former golfer and lorry driver, David Townsend went to the First National Bank of Chicago in London. He obviously impressed the staff and management there for he was offered a position at the installation. He accepted and starts in January.

The site houses two IBM System 3 Model 15s, supports an online system with eighteen ter-

minals, and also processes batch and testing work.

David admitted to being "lost at first," but buckled down and tried to make himself useful to the staff as well as adding to his knowledge.

"The supervisor explained that everything would seem rather strange at first — he was right. He gave me a manual and told me to watch how the operators work at the console."

During the first week David worked from 9 am to 5 pm. In the second week he was on the evening shift and during the third he did "earlies."

It was obvious that David gained a good appreciation of the problems which crop up in the day-to-day running of the operations department.

On one occasion, the decollator broke down at a very unfortunate time; it was late in the evening shift, and listings had to be dispatched in order to meet deadlines.

Said David, "I had to stay late and decollate a lot of output by hand. I didn't mind in the least, because the site hires cabs for the operations staff and I had no problems getting home."

He also mentioned an occa-



Steve Ward

sion when one of the system discs became jammed as it was being loaded on to a drive. This brought to his attention the need to handle media and peripherals with respect. No machine time was lost on that occasion, he stressed.

David also spent some time in the data control section of the site, when the data controller was on sick leave.

Steve Ward was at the Bromley, Kent, site of the Seismograph Service for his three-week practical block. Like David Townsend, he spent the first week on days, from 9 am to 5 pm.

Then he worked a twelve-hour shift system, "four days on, four days off."

Steve, who already has two years' operations experience, didn't have too many problems adjusting to the shift system, but nevertheless expressed his dislike of it.

He said, "When I was an operator at Seiscom Data's site in Sevenoaks, Kent, we worked a twelve-hour shift system. I have never liked it.

"In my view eight-hour shifts are much more practical and must be easier to get used to."

The Seismograph Service site has several different systems, and Steve operated an IBM 360/65, which runs under OS/MFT with HASP, the Houston Automatic Spooling Program.

He said, "The OS operator commands are quite interesting,



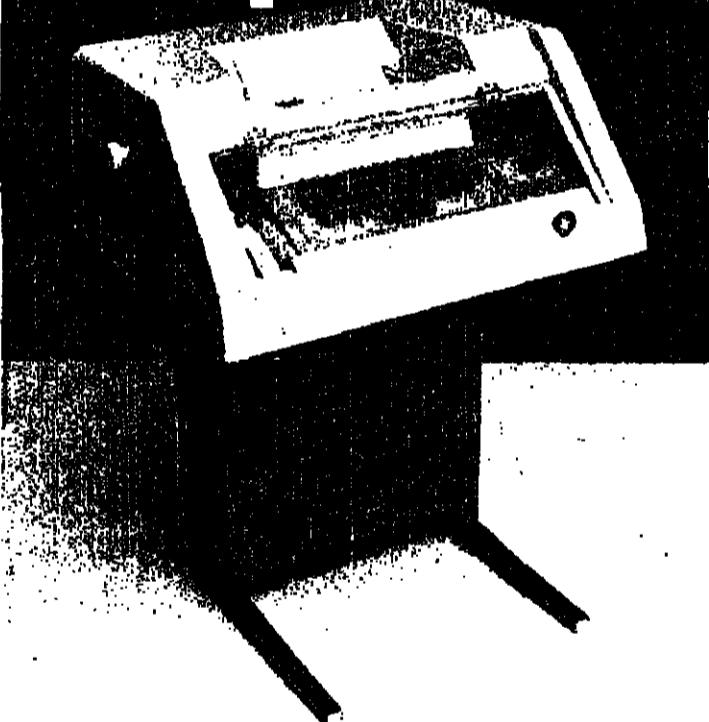
David Townsend

David also learned about dealing with the problems of users online to the system.

He said, "It's important that online users are given a good service. A couple of times they contacted us to complain about their terminal being down. This problem arises if the units aren't powered-on at the time we start the TP program."

He also mentioned an occa-

be boyden quiet



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The READER procedure under IBM OS

IN past Op Spots I have given a broad description of IBM OS, considered the types of message issued by that system in order to communicate with the operator, and discussed the problems of main store, or core, fragmentation.

Now I would like to give further consideration to the READER procedure: that part of the operating system responsible for taking jobs from input devices and placing them on the input queues.

IBM OS will support up to three READER procedures at any one time. Each is assigned a physical unit, normally a card reader, but another device, such as a tape reader, may be used.

The command used to start the READER procedure has the following format:

S PROCNAME.IDENTIFIER, DEVICE ADDRESS

Installation standards will often dictate the exact command used by the operator in

order to start the READER. At many sites it will not include an IDENTIFIER, and might be as follows:

S RDR.00C

In this case card reader unit 00C is assigned to a READER procedure called RDR. Once the procedure has been started it stays in main storage and may be used to place card input onto the job queues.

An IDENTIFIER is not included in the above example as they tend to be seldom used. However, they may be applied to good effect at installations where open shop testing is carried out. At such sites, one card reader will be assigned to live work and another to testing, allowing the programmers to input their own work to the system.

And when it is time for open shop testing to cease, he may STOP the appropriate reader device by specifying "TESTS" rather than the unit number, as

in the following example:

P RESR

As earlier mentioned, batch input may also be read from magnetic tape. To achieve this, the following command might be used:

S RDR.290,123456

In this example, 290 is the address of the tape drive and 123456 is the volume serial number of the magnetic tape on which the input exists.

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Tektronix UK Ltd.
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Whilst working alone in the computer room, he wasn't found for over an hour and this happened during the daytime, too."

For operators who work by themselves and are worried about their personal safety, Deborah has the following hint:

"Discuss the matter with your operations manager. If he is unsympathetic, and you are not a member of a union, visit your local Health and Safety Executive and ask for advice."

"One operator took this action and was told that they would suggest at least two operators on shift, when there is no one else in the building. The officer said that he would raise the matter on his next visit to the installation."

Engineers, Mathematicians, Scientists and

Technical Programmer/Analysts

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The Arabian American Oil Company (ARAMCO), in computer terms, is one of the most exciting companies in the World with the largest configuration between Rome and Tokyo.

As a result of ARAMCO's exceptional growth, the Manager of the Computer Department will be in London from January 22nd to January 26th. He wants to hear about your experience and to discuss with you how you can best utilise your know-how with ARAMCO, whilst, at the same time, developing new skills and expertise in a dynamic and thoroughly sophisticated environment.

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applications with experience of the ICES system on an IBM 370; knowledge of COGO, or ROADS, or STRUDL; and the use of Fortran and PL/1.

Simulation sciences and experience of GPSS and linear programming systems.

Electrical Engineering applications with experience of Fortran and/or PL/1.

You must have a minimum of two years' up-to-date experience which is relevant.

We would also welcome contact from Programmer/Analysts whose background is in Business/Commercial applications using COBOL and/or PL/1.

From January 22nd, the Company's representative will be in London for one week to meet you and discuss the possibilities and benefits to your career of a 1 or 2 year renewable contract in Saudi Arabia. Please send a résumé today, or ring, quoting ref 8403, to Richard Darvell for documentation. Astral Recruitment Associates, Astral House, 17/19 Maddox Street, London W1R 0EY. Telephone 01-629 2356 (ansafone after 6 pm).

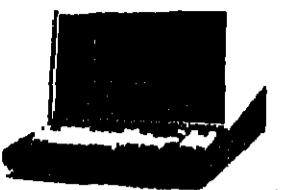


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PEOPLE AND EVENTS

First director for Avon universities

THE University of Bristol has recruited an expatriate Englishman, at present living in Australia, to head the Avon Universities Computer Centre (AUCC).

Dr G. Lance, until recently chief of computing research at the national Australian science foundation CSIRO, in Canberra, will be the first director of AUCC and will be responsible for setting up the centre's computing services, based on a Honeywell Level 68/68/68 Multics system (CW, June 22, 1978).

The Multics system, the first to be sold outside the US, was delivered to Bristol shortly before Christmas (CW, December 21/28, 1978) and is expected to complete its CCA trials by the end of March.

Dr Lance, who will take up the appointment in March, has pre-



Ergonomics specialist at Butler Cox

A UK EXPERT in system ergonomics and word processing Tom Stewart, has been appointed a specialist consultant with Butler Cox and Partners. Stewart, who is also a well known author and public speaker, was previously a lecturer at the University of Loughborough. In his new position he will be working on consultancy assignments in the fields of ergonomics, man-machine interface and the effects of systems on people.

Peter Nicol has joined Grundy and Partners as sales manager for Truedata, which is the company's interactive display terminal. He was formerly area sales engineer for Electronic Associates.

AMD director

THE new director of European marketing for Advanced Micro Devices is Norm Miller. He will be stationed at the company's European headquarters in Brussels, Belgium. Miller was previously director of special projects for the company, and before that was European general manager for Signetics Corporation. In his new position he will be responsible for all European marketing, sales and application efforts.

Bob Wallace has been appointed senior associate consultant with BIS Applied Systems. He was formerly an independent consultant for the printing industry.

Roland Ford has joined Compdata as technical manager, after leaving Atkins Research and Development where he was head of the software department. Alan Clarke becomes a systems engineer at Compdata. He was formerly a member of the applications programming group at the Computer Aided Design centre at Cambridge.

Ian Lambden, formerly a test engineer with the CSS division of the Digital Equipment Corporation, has been appointed a sales engineer for Ampex computer products in its UK and Ireland region.

Geoffrey Griffiths has been appointed sales manager of Arbat (UK). Prior to joining Arbat, he was with Redifon where he was southern branch manager. In his new position he will be responsible for the company's banking systems and the Inflex system.

Irene King has been appointed to the board of directors of Jackson Associates. She will continue in her present position of bureau general manager.

Head of new department at CDC

TO help expand the range of products available from its Data Services bureau division, Control Data has set up a product department to look for new software packages and produce marketing aids for them.

The man in charge of the new department is Geoffrey Holland who has been a sales manager with the Data Services division till now.

Data Services offers large-scale engineering and scientific processing on its Cyber service, which is based on a line-up of Control Data mainframes in Brussels. It also provides financial modelling on its Call service which runs on 13 IBM 370/388 at Cleveland, Ohio, and general

Peter Baxter is to head a newly formed sub-division of the Data Products division of Cole Electronics, which will market a range of systems manufactured by Tab Products of California. He was formerly sales manager of the Data Products division. Kathy Carew, who was previously a punch operator with South Eastern Gas, and Margo Ross, a former programmer at Phillip Morris, will be promoting the products of its banking systems and the Inflex system.

Dave Brand has become district sales manager for AMD (UK), with responsibility for the major OEM accounts in the South West. He was formerly field sales manager, integrated circuits, with Mullard Signetics.

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DIARY

JANUARY 18

Student papers on computing. BCS Teesside and district branch, Teesside Polytechnic, Middlesbrough, 19.00.

JANUARY 19 Winter papers meeting. SEAS, Brighton. Details from local organiser, 01-632 9342.

JANUARY 18 Design and optimisation of job scheduling strategies. I. Miers, BCS Formal Aspects of Computing Science Group, Polytechnic of Central London, London W1, 18.30.

Working parties' reports. Association of Project Managers, Waldorf Hotel, London WC2, 10.00. Details APM, 01-788 3182.

Microprocessors and portability. Microprocessor Application Group, IEEE, Savoy Place, London WC2, 18.30.

An update on planning systems from the point of view. Peter Cook, BCS Urban Planning group, Lammas, 3 Nottingham Gate, London WC1, 14.00. Please notify 01-828 2233, ext 24.

Problems of changing computers. Robin Scrase, BCS Cheltenham and Gloucester, Gals Club, Fournile Gardens, Gloucester, 18.30.

Computer use. BCS Birmingham branch, Birmingham, 18.30. Details from R. Watsham, Bromsgrove 73077, ext 2528.

Visit to the British Shop Research Association for demonstration of computer graphics software. BCS Newcastle branch, Newcastle, 18.30. Notify L. Smith, Newcastle 27320, ext 102.

JANUARY 17 Planning for automation. Tony Benn, Barry Sherman, Dr David Eversley, Polytechnic of the South Bank, London SW4 915.

User terminals for communication systems. Colloquium, IEE, Savoy Place, London WC2, 18.30. Register 01-240 1871, ext 282.

Fault simulation in long-distance communication systems. Discussion, IEE, Dr A. T. John, 200 Newgate Street, EC1, Savoy Place, London WC2, 17.00.

Business software for micros. Dick Waller, BCS Sussex branch, Imperial Hotel, Horley, 19.30.

Privacy and computers, census confidentiality. BCS S Wales branch, Bua-

Wallace

Frost

Nicol

Stewart

COURSES

INFORMATION systems, organisational choice and social values are the subject of an EEC-CNR Crest Course to be held at Pisa University, Italy on April 9-20, 1979. For further information, the detailed course programme and application form, write to Professor G. Traversi, Istituto di Matematica Finanziaria, Via delle Fragole 7, Pisa, Italy, before January 31.

DISTRIBUTED intelligence and terminal networks is the theme of a five day residential course to be held at Queen's Hotel, Eastbourne, from Jan 29-February 2, and organised by BIS. Booking details from Jackie Collins, Course Registrar, BIS Applied System Limited, York House, 180 Westminster Bridge Road, London SE1 7UT. Telephone Mordenhead 3903.

A COURSE on real time computing is to be held at the Hounslow Borough College, Department of Business Studies. The course consists of six meetings on Tuesday evenings commencing January 23. Details from the Head of Department of Business Studies, Hounslow Borough College, London Khal, Isleworth, TW7 4HS.

CONFERENCES

THE analysis of meaning is the theme of Informatics 6, the fifth in a series of conferences on the general theme of representing, organising and manipulating information. The conference will be held at Queen's College, Oxford on March 21-23, and is sponsored by Ashby and the University of Warwick. The conference will be held within the areas of semantics and general semantics, linguistic semantics and applied semantics, artificial intelligence systems and information retrieval systems, and should be submitted as soon as possible. For further information contact The Conference Organiser, Ashby, 3 Belgrave Square, London SW1X 8HJ.

JANUARY 28-29 Meeting. IBM CUA Programming group, Marconi Hotel, London. 14.00.

FEBRUARY 1 Presidential address. Prof Frank Summer. BCS Country branch, Lancashire Polytechnic, Coventry, 19.30.

Where a data dictionary fits into data management. E. W. Howell, BCS Leeds branch, Parkway Hotel, Leeds, D3.

JANUARY 28-29 Meeting. IBM CUA Programming group, Marconi Hotel, London. 14.00.

FEBRUARY 1 Presidential address. Prof Frank Summer. BCS Merseyside branch, Computer Lab, Liverpool University, Liverpool, 18.00.

Talking to the computer. W. Henshaw, BCS London branch, Computer Services, British Polytechnic, 19.15.

BUSINESS COMPUTER SYSTEMS. BCS Nottingham, 18.30. Details Terry Draper, 0602 401-1 ext 4725.

JANUARY 18 Series 1 communications seminar. Seminar (Europe) IBM users' association, Westgate, BCS Birmingham branch, Birmingham, 18.30. Details from R. Watsham, Bromsgrove 73077, ext 2528.

Visit to the British Shop Research Association for demonstration of computer graphics software. BCS Newcastle branch, Newcastle, 18.30. Notify L. Smith, Newcastle 27320, ext 102.

JANUARY 17 Planning for automation. Tony Benn, Barry Sherman, Dr David Eversley, Polytechnic of the South Bank, London SW4 915.

User terminals for communication systems. Colloquium, IEE, Savoy Place, London WC2, 18.30. Register 01-240 1871, ext 282.

JANUARY 24 Control of large-scale systems, colloquium. IEE, Savoy Place, London WC2, 14.00.

JANUARY 25 Electronic news gathering. IEE, Savoy Place, London WC2, 14.00. By ticket only from the Secretary, 01-240 1871, ref. LSE.

MICROPROCESSORS, research and its re-

Online print press likely by mid-1980s

A HIGH-SPEED offset printing press that could operate online to a computer may be the successor to the IBM 3800 laser printer in the mid-1980s, according to a report on printers and printer technology, which concerns itself with the use of printers in the much discussed "office of the future" and covers a wide range of application areas, including word processing, electronic mail, computer output microfilm and intelligent copying and facsimile printing.

Two rapidly developing non-mechanical printing technologies — ink jet printing and xerography — are each discussed in chapters of fewer than ten pages, while 24 pages are devoted to mechanical printing.

Another "exotic" technique, magnetographics, is described in the report as "a sleeping giant". This technique involves a mist of magnetic ink and could be employed in an offset printer where the ink would be applied to one roller, transferred to a second and from that to the paper. The report includes a diagram of such a machine — an ink mist printing press — that has been patented by IBM.

A chapter on "exotic" technologies includes a diagram of such a machine — an ink mist printing press — that has been patented by IBM.

A less familiar technique dis-

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Scratching where it itches



REPORTS FROM THE FOUNDATION

Reports from the Foundation is a new Computer Weekly series based on the work of the Butler Cox Foundation research group. The reports will examine a variety of topics relating to the development and use of information technology. In this first report, the Foundation chairman, DAVID BUTLER (pictured left), takes a look at the future role of the management services. Butler is chairman of Butler Cox & Partners, and is responsible for all the company's research-based services.

TWO tramps were sitting on a park bench. "Would you like a steak and chips?" says one. "Yes please," says the other. "Me too," replies the first, staring glumly into space.

Reflect for a moment upon this exchange. The first tramp has made a correct analysis of the second's needs: spot on, no question about it. In fact he fully endorses the need, subscribes to it himself. But he lacks the means to satisfy it. The humour (slight as it is) derives from the fact that by asking the question the first tramp is assumed to be capable of providing the answer. The question is taken as an offer.

A management services

director and his boss were sitting on a bench in a park. "How would you like an information system that is designed to reflect rather than dominate your organisation structure, provide good communication and a high level of decision-making support, all at a price you can afford?" says the MSD. "Yes please," says the boss. "Me too," says the MSD staring glumly into space.

In this case, however, the joke is on the management services director. For in truth technology now exists for him to deliver the kind of system he has described. Much of the ill-repute in which systems were held in the past

has stemmed from the inability of the systems manager to deliver a product which matched the expectation of the user. There is plenty of evidence that this situation need no longer prevail.

What lies behind this transformation in the ability of systems to meet the user's needs? There are many specific developments which are contributing towards this change. They include the advent of economic word processing equipment, the imminent availability of videotext, the possibility of improved facilities for telecommunications such as electronic exchanges and satel-

lite channels and a host of other specific developments. I want, however, to explore in this introductory article the basic phenomenon which I believe lies at the heart of all these developments. It has been termed the Convergence of Technologies and it manifests itself through the ubiquitous microprocessor.

Silicon technology — the technology of the computer industry — has invaded the telecommunications industry and the office products industry. The techniques devised by computer manufacturers and the suppliers of semiconductors have become basic to the production of stored program con-

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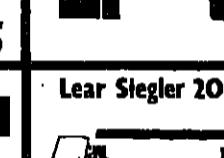
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MICRO NEWS

Gallium Arsenide based chips a Univac priority

ALL the major computer companies now have their own in-house semiconductor research establishments, but much of the work is carried out unseen and unremarked.

However some extremely interesting pointers to Univac's thinking and plans in the microelectronics field emerged when Dr Barry Borgerson, director of research and technical planning, visited London last month and gave Computer Weekly an exclusive interview.

The principal technologies that Univac is working on for VLSI, very large-scale integrated circuitry, are short channel NMOS and SOS C-MOS. It is also researching into Gallium Arsenide as an alternative substrate material to Silicon.

"Electron mobility in Gallium Arsenide is five times greater than in Silicon, but it is expensive, and the performance achieved with Silicon keeps improving," said Dr Borgerson. "We are also working on very fast emitter-coupled logic."

"In fact we have in-house facilities for four technologies: ECL, NMOS, CMOS and Gallium Arsenide. We have to have our own: not only is it cheaper than buying in the chips, the circuits that we want are simply not available from third party suppliers. The volumes are too low and would be given low priority by the semiconductor manufacturers."

The company has both electron beam and X-ray equipment for circuit drawing, and Dr Borgerson says that a combination of the two looks promising for producing high density circuits. The approach involves drawing masks using electron beams, and then using X-rays to etch through the masks onto the chip.

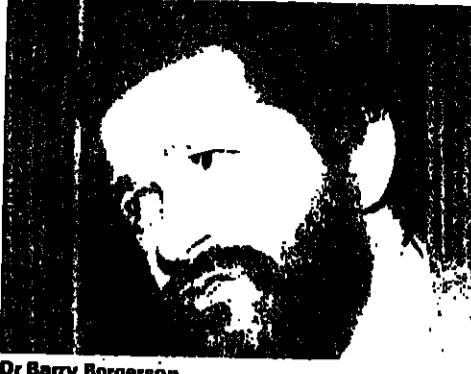
Although not following IBM down the Josephson Junction path, Univac is studying the effects of temperature variations on different materials.

Josephson Junction technology enables very high-speed logic to be built, but requires temperatures close to Absolute Zero (-273°C) to operate. However the ability to operate over a wide range of temperatures is also important, and Univac is studying Niobium-based technology.

There is growing speculation, in fact, that some form of agreement will be reached by Mostek and Intel on standardising their respective devices, as a follow-on to the second sourcing agreement on the Intel 8086, 16-bit microprocessor.

The form of the agreement is still very much open to question, for though the two memory specifications are broadly similar, they have one fundamental difference. As these devices use a single power supply voltage, one of the 16 pins in the package is left unassigned. Intel favours leaving it as such, while Mostek favours putting on some useful function, such as automatic refresh, on to the pin.

Motorola has also been active in development associated with the MACS 68000 16-bit microprocessor. Some of this work has gone into providing extra software support. While the chip's own compiler will be written in



Industry speculates over rumours of 'entirely new' Intel 16-bit device

SPECULATION is rife that Intel could be introducing an entirely new 16-bit device in addition to enhancements on its 8086 16-bit chip.

The enhancements include an 8 MHz version, which will upgrade the throughput of the standard version with its 5 MHz

clock rate. They will also include the 8086 input/output processor and 8088, 8-bit data bus version, which were both first rumoured over a year ago (CW, November 24, 1977).

The 8089 is expected to be introduced during the second quarter of this year, and is an

important peripheral device in the 8086 range. Its function will be to take a substantial load off the CPU chip in systems where there is a large amount of I/O processing.

The 8088 will follow a similar approach to that followed by Texas Instruments with its 9980/9985 versions of the 9900.

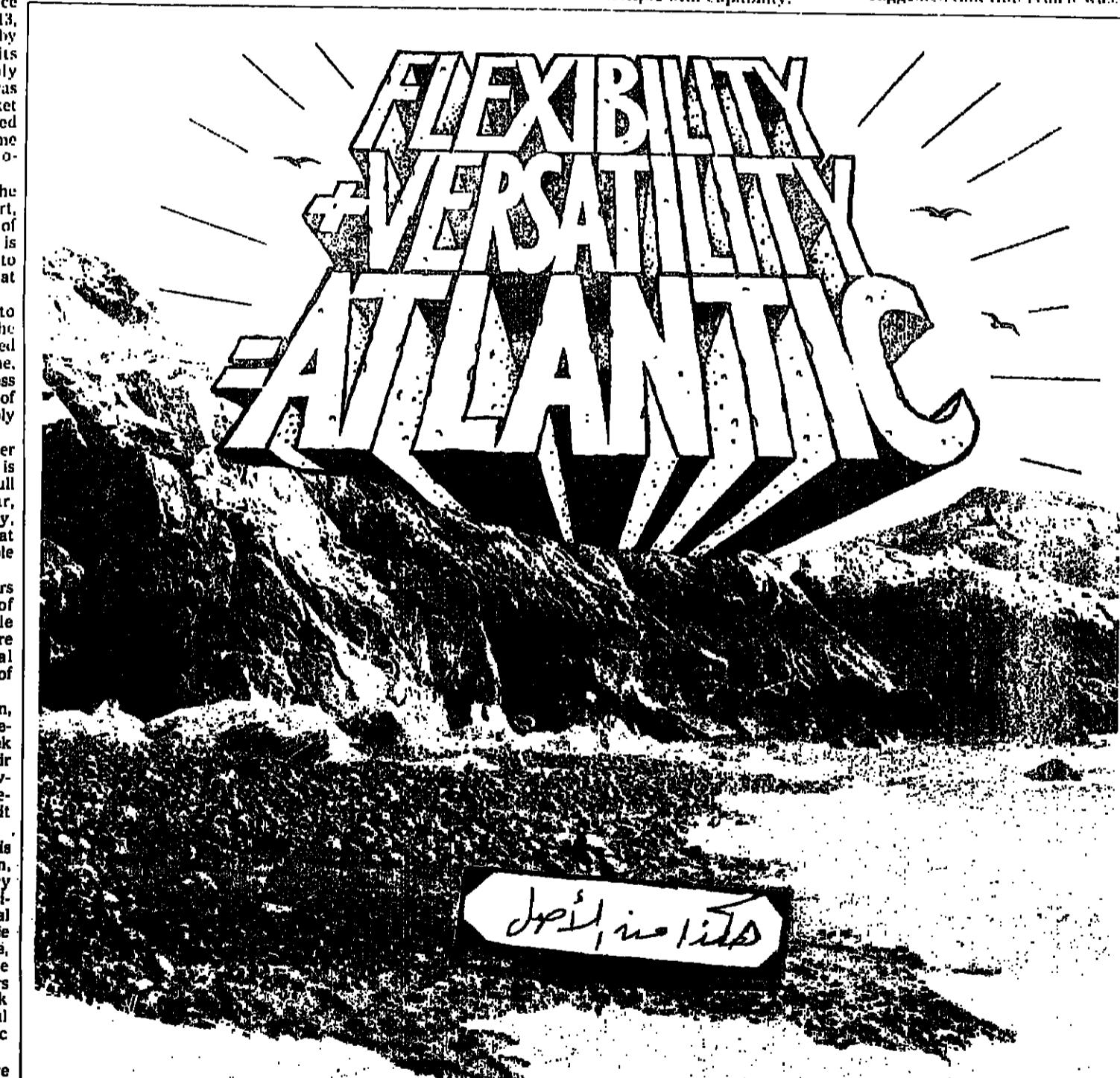
A further enhancement that is the subject of speculation at present is a single chip version of the 8086. An Intel spokesman in Santa Clara, California, confirmed that such a device was the subject of a current research project within the company, but said that there was no timescale laid down for its introduction.

More speculation centres around a microprocessor that is being called the 88000 in industry. The speculation suggests that this part will be a completely new 16-bit design that will quickly supersede the 8086. The Intel spokesman said that he had heard this rumour, and suggested that that is all it was.

Motorola market test hots up 64K RAM race

Pascal (CW, September 7, 1978), the company is now also developing Assembler and Simulator cross-products written in Fortran.

According to the company, this is only a temporary step. The cross-products are intended for major potential users that



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Query over TI personal system

AMERICAN reports suggest that Texas Instrument's projected launch date for its personal computer system may be slipping away from the target of this month.

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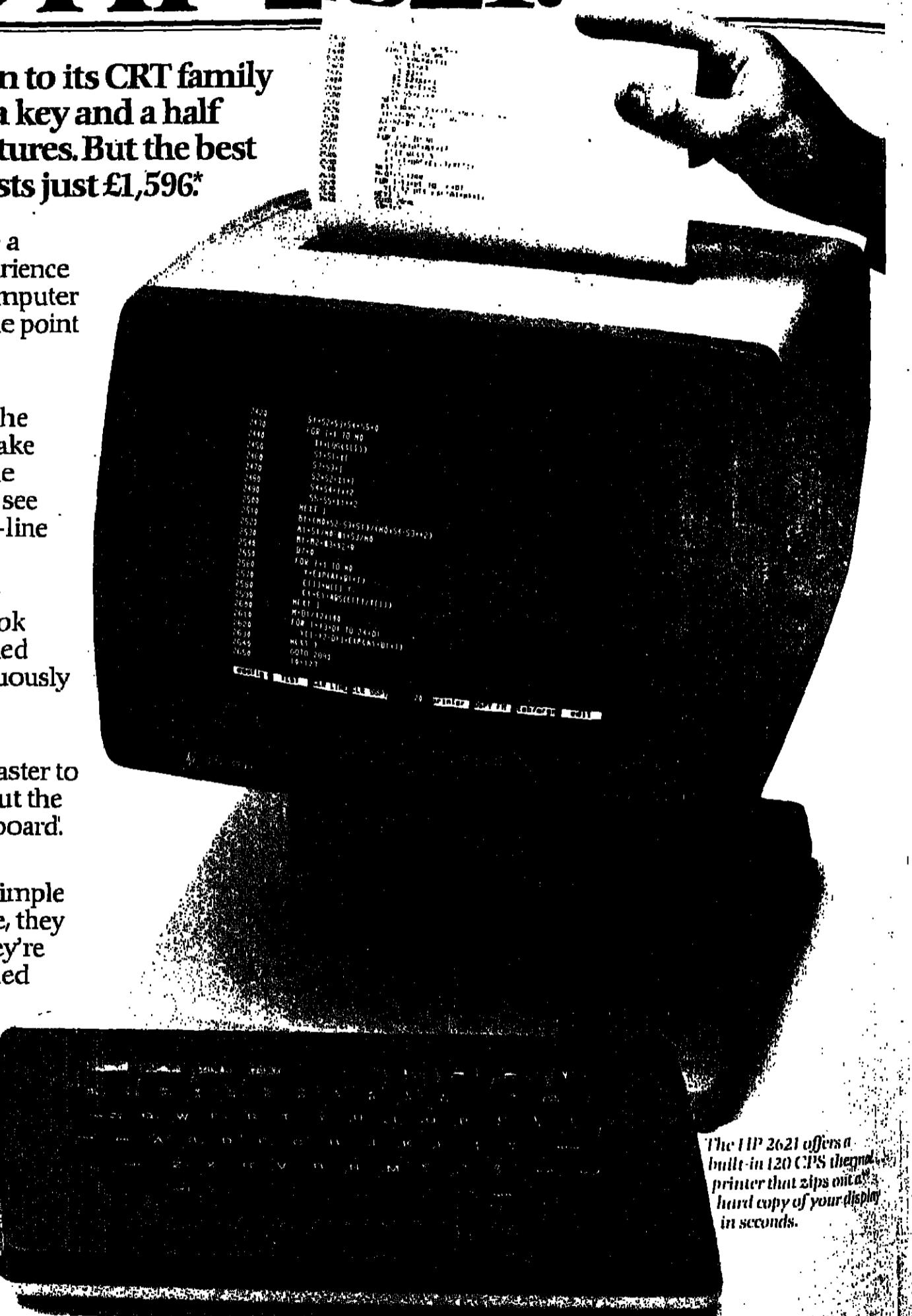
...Which makes the 2621 easier to learn, faster to use. And to accelerate keying in numbers, we put the numeric keypad right in the middle of the keyboard.

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NUMBER 89

INTERNATIONAL BRIEFING

Canadian privacy threat

THE Consumers' Association of Canada has expressed concern to the Canadian Parliament that a proposed nationwide bank payments system would constitute a threat to individual privacy. The Association wants four members of the general public on the board of directors of the Canadian Payments Association, the system's operating body.

Commenting on the large amounts of information on individuals that would be accessible on computer files, Helen Anderson, of the CAC, said: "It's 1984 staring us in the face. It's Big Brother. I think we will lose the battle by default unless we all stand very firm on this."

Mexican offshoot

A MEXICAN subsidiary has been established by plug compatible peripheral manufacturer, Storage Technology. Based at Mexico City its first customer is the Institute of Technology at Monterrey.

8100 for S Africa

IBM has sold the first 8100 information system to Pretoria College for Advanced Technical Education. The system will consist of a central processor and online display screen and printers which serve as workstations. Although the system can stand alone it will be linked to the Department of National Education IBM 379 installation, also in Pretoria.

More Amdahls

FOLLOWING installation of the first Amdahl 470V/6 at the Italian Finance Ministry (CW, April 27, 1978), three more of the IBM plug-compatible mainframes have been installed with agencies of the Italian government. The Finance Ministry has installed a second V/6, and the Italian Treasury has installed two, replacing several large-scale IBM 370s in the process.

Tandberg rescue

A RESCUE plan has been formulated for the computer peripheral interests of the bankrupt Norwegian company, Tandberg (CW, January 4). A new company, owned 40% by Norway's national Industrial Aid Fund, and 20% by the Kongsgberg heavy engineering and electronics company, minimaker Norsk Data, and the Smirdal electronics company, is to negotiate with the Tandberg receiver for acquisition of the visible parts of the company.

Plans for Mark III

THE new company, General Electric Information Services, formed to operate and market the GE Mark III time-sharing service worldwide, has now come into formal existence (CW, June 16, 1978). GE plans to offer users intelligent terminals for attachment to the network along with applications software which is on test in the US.

Iberia joins the Univac flight path

THE Spanish national airline Iberia has followed Lufthansa and SAS along the prescribed Univac migration path by laying plans to replace its Univac 404 mainframes with an 1100/80 system.

As an interim step to installing the four-processor 1100/84 system, the airline is to supplement

Computer Weekly International

THURSDAY, JANUARY 11, 1979

Framework for sharing technology with Third World

BILATERAL collaboration between one developed and one developing country provides the most viable framework for the sharing of computer technology, believes Alan Benjamin, director-general of the UK Computing Services Association.

Speaking to the Specialist Group for Developing Countries at BCS '79 in London last week, Benjamin noted that CSA members were working in 68 countries, many in the Third World, and said that UK government-backed collaborations were being discussed with the governments of four countries.

The four are Mexico, Greece, Turkey and the Sudan. The ventures are in various preliminary stages of discussion.

He rejected the term "technology transfer", preferring to talk of sharing technology — "sharing implies that there are no strings attached," he said — and outlined three preconditions for successful sharing of technology:

- The needs of the developing country should be clearly identified and stated;
- The developing country must be prepared to devote adequate resources to the projects;

● The projects should be independent of political constraints, since changes of government are particularly unpredictable in developing countries, and unless projects were seen to be of value by government and opposition alike they were likely to founder following a change of regime.

Amplifying this point, he cited Iran, where many of the more ambitious computer projects are threatened by the current unrest. In particular, he stressed the need to outline clearly the consequences if a particular project were not carried out.

Although the concept of sharing implies a matching of resources with needs, the resources being with the developed country and the needs in the developing, the flow of benefits was by no means one way.

"We are involved with one country where an intensive three-day session made it clear to us that they had thought through their training requirements far more thoroughly than we have, and some of their procedures could be applied to advantage in the UK," he said.

"Since typically one is involved in detailed day-to-day discussions with the government of the developing country, one gets surprisingly close to the fundamental workings of that government, and is in a unique position both to influence and to learn."

Outlining the kind of projects the UK government and the CSA are keen on initiating in partnership with Third World countries, Benjamin took the example of one country where collaboration is getting under way.

"They had one vital government computer system hanging by a thread, with a single ageing analyst the only person who really understood it. We are now laying plans to put together a training scheme for ministry personnel, looking to develop mid-term administrative systems, and establish standards and documentation systems."

"It should lead to the development of two or three major systems. The only condition that we are imposing is that at every stage of every project, indigenous and involved."

Transpac goes live —but with only four switching centres



Power back-up for Delhi 2960

THE ICL 2960 for the New Delhi Indian Institute of Technology is to be powered by a Chloride Transpac uninterruptible power supply worth \$84,000. Now installed in Delhi, the power supply, shown in the picture undergoing final tests at the Hasling factory before despatch, will protect the computer from Delhi's erratic electricity supply, and includes batteries capable of maintaining power for up to 15 minutes in event of blackout.

● The 2960 has given ICL some

a traffic charge of 0.06 francs per Kilobyte of data transmitted.

The traffic charges are reduced by 40 per cent after 7 pm, before 8 am and on Saturdays, and by 80 per cent from midnight to 6 am every day and all day Sundays.

For people without a local packet-switching exchange, the direct access charge is replaced by the standard telephone or telex charges to the nearest exchange. It is noteworthy that charges on the network itself are volume-dependent but distance independent.

The Transpac operation company is 67 per cent publicly owned. Another 28 per cent of the shares are owned by a company called Utipac, in which founders' members, all of which plan to be big users of Transpac — banks, Air France and so forth — hold shares, and in which any user can become a shareholder. The remaining 5 per cent of the shares are held by PTT employees.

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Growing Mid-East software demand

A FURTHER order from Kuwait for the MMS general ledger and financial reporting system has confirmed Package Programs' view that the Middle East is an increasingly significant market for software packages.

The latest order comes from Yusuf A Alghanim & Sons, the main importers of General Motors vehicles in Kuwait, and follows a similar order from Gulf Air, the international airline.

PPL has also installed software in Iran, where a Tehran computer bureau runs PPL's payroll and personnel system to serve several British construction firms working in the area.

Noting the growth in demand, PPL chairman Roy Taylor commented, "Developing in-house software demands skilled specialist staff; not only are these people not available from the indigenous population but importing them is prohibitively expensive. There is only one way, and this is to buy a package off the shelf."

Munich debut

The latest overseas company to be set up by the NRD's Computer subsidiary is in Munich.

Computer specialises in marketing high technology software systems for engineering and computer aided design applications. Its principal products include Gaadic, a package for integrated circuit design, and P-DMs, a system for managing the design of complex chemical and industrial processing plant.

Federal agencies budget for big expansion in spending on DP

EXECUTIVE branch agencies in the US Federal government are expected to increase their spending for general-purpose data processing activities from \$3,707 million in Fiscal Year 1977 to \$4,660 million in FY78. Executive agency spending for DP activities during FY 78 was expected to total \$4,237 million.

These and other statistics on Federal DP resources were compiled by the US Office of Management and Budget, based on data included in the 1978 budget of the US Government that was submitted to the Congress last January.

In the summary information, now released, the Management and Budget Office points out that the figures do not include resources for items such as "classified" DP activities; computers which are an integral part of combat weapons, space and similar systems; telecommunications associated with the transfer of data; and with the processing of data; and analogue computers.

OMB points out in its report that annual obligations for general purpose DP activities of executive agencies, which represent slightly less than one percent of the total budget, continue to grow at about the same rate as the total Federal budget.

The OMB report points out that the number of computers owned and leased by Federal agencies for general purpose DP increased significantly during FY 77, from 3,803 to 5,000, and further growth is anticipated during FY 78.

The trend toward purchasing rather than leasing computers in the Federal government is continuing. At the end of FY 77 the government owned 79.3% of its general management computers and 97.6% of its special management computers.

Other trends in spending patterns show that the actual obligations for purchase and rental of computers continue to be less than the executive budget for these purposes.

The Federal DP workforce has remained relatively stable in the past decade. OMB says the increased workload has been met largely through increases in the purchase of commercial services for systems analysis, programming and computer operations rather than through increases in permanent personnel.

While the proportionate amount of DP resources spent for commercial services had been increasing rapidly (from 23.7% of the total in FY 76 to 26.4% in FY 77), the amount spent for purchase of commercial computer time sharing services has not increased at the same rate as other types of services, Figure 1.

The most significant increase has been in the purchase of systems analysis and programming services (from 7.6% in FY 76 to 8.1% in FY 77) and in the purchase of operational support services (from 4.1% in FY 76 to 4.9% in FY 77).

The operational support services category includes contracts for the operation of government computer facilities as well as some contractor facilities which are dedicated to supporting specific federal agency work.

The most significant difference between Federal and private sector computer spending patterns in the US, OMB says, is that federal agencies spend proportionately more for commercial DP services and less for hardware than private sector firms, Figure 2.

For FY 77, the Federal government spent 28% of its total budget for outside services and 22% for hardware. The comparable figures for the private sector during the same year were 16% and 35% respectively.

For FY 78, the Federal government was expected to spend 28% for outside services and 23% for hardware, while private industry was expected to spend 17% for outside services and 35% for hardware.

While the proportionate

Figure 1. This diagram shows the distribution of DP costs incurred by US Federal government agencies during Financial Year 77.

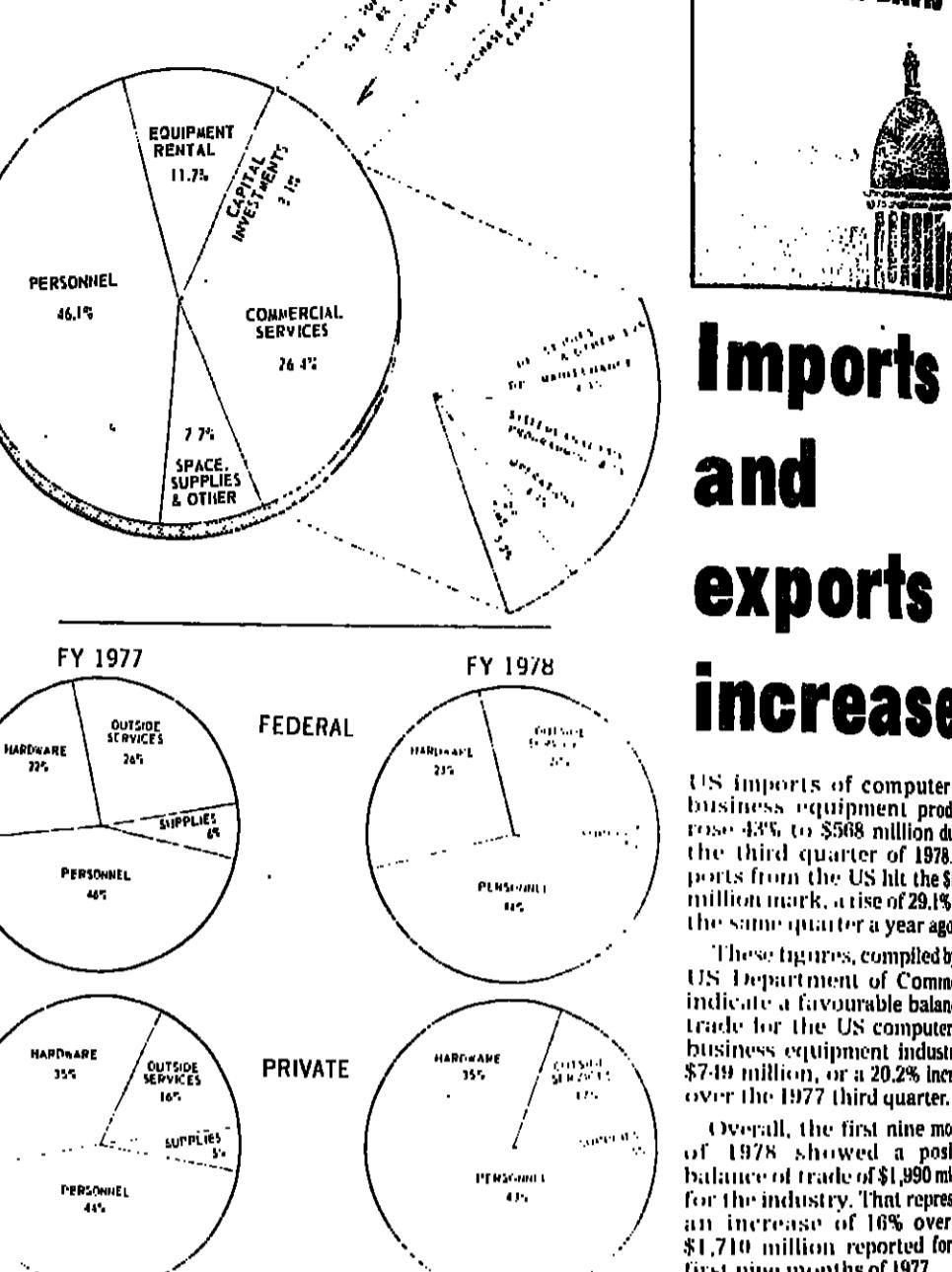


Figure 2. A comparison of Federal and private sector spending on DP in FY 77 and FY 78.

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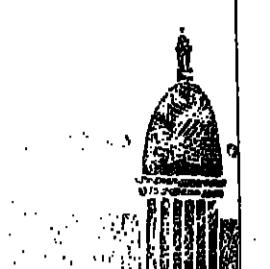
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WASHINGTON REPORT

BY CAMERON DAVIS



SAfrican 'threat to individual privacy'

From Esmond Frank in Johannesburg

RAPID advances in computer technology pose a serious threat to the privacy of the South African individual, warns André Botha, official spokesman for the Computer Society of South Africa. "The potential for the abuse of computer technology is clearly here," he says.

And he admits that the local computer industry has been "rather lax" in formulating a code of ethics, although it is seriously considering the appointment of an "Ombudsman" to hear complaints on computer data abuse from members of the public.

He does not believe, however, that legislation to control the use of computerised personal data will be introduced in South Africa until there is a public outcry about abuse.

Botha points out that while computer frauds are perpetrated for financial gain, computer abuse is also involved in many industrial espionage operations.

Comments Dr Sulcas, "More of this type of crime will take place unless management exercises far greater supervision over the activities of computer departments.

"Computers," he emphasises, "have not taken over the world and can be controlled. Computers are as honest or dishonest as the people who feed information into them."

Questioned about government use of computerised information in South Africa, Botha says he was personally involved with the installation of the system used by the Department of Interior.

"The government, I am pleased to say, took a strong line after recognising the potential for abuse and has incorporated built-in safeguards to ensure that personal information stored in the system cannot be retrieved for the wrong sort of usage."

Overall, the first nine months of 1978 showed a positive balance of trade of \$1,990 million for the industry. That represents an increase of 16% over the \$1,710 million reported for the first nine months of 1977.

According to Commerce Department data, US exports rose 26% during the nine-month reporting period from \$2.87 million in 1977 to \$3,620 million in 1978. Imports, however, experienced a substantial increase of 40%, going from \$1,100 million in 1977 to \$1,630 million by the end of the first three quarters of 1978.

Computers and related equipment, including parts, account for over 80% of the industry export total in the first six months. Broken down further, computers and related equipment exports for the period totalled at the \$1,000 million level, while over the same period in 1977 the figure was \$1,700 million.

Commenting on the growth plans, Maillet said that they were more ambitious than those set by the parent company for its total business, but were in keeping with ICL's policy of seeking particularly rapid growth in continental Europe.

The ICL subsidiary Down Under has reported profits up 334% at \$Aust 2.25 million on turnover up 27% at \$Aust 52.5 million. The dramatic turnaround in the company's performance includes turnover almost doubled over two years, while 40% of the deliveries made in 1977-78 were machines for rent rather than purchase. There are now 14,200 units, from the 2850 up.

Installed in Australia, and another 20, worth \$25 million, on order, ICL Australia is the company's third largest overseas subsidiary, after South Africa and France, and just ahead of West Germany.

• ICL's Indian manufacturing

Laser systems

AS part of a five-year development programme, all 30 stores in Publix Supermarkets' Jacksonville division are to install NCR 255/726 and laser scanning systems to handle the reading of Universal Product Code marked key to disc system has been installed to meet demand.

Name change

THE Information Terminals Corp, the US based manufacturer of magnetic tape cassettes, has changed its name to the Verbatim Corp. The company has used Verbatim as the brand name for its range of products for several years. Verbatim products are sold in the UK by Willis Computer Supplies.

The figures on calculated imports, revealed a decrease of 18.4% million during the nine months of 1977 to 1978.

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The new franchise agreements are the latest developments in a growing pattern of Simpact activity overseas. In southern Africa, the group is represented by Simpact South Africa (Pty), while in Italy there is an associate company, Simpact Srl.

In Holland, the company will trading as a group for only a few years, it has already won a number of prestigious customers for its products including PCL, ICL, Texaco, Siemens, Honeywell Controls, Centreline, Simpact Srl, and the Bank of Italy.

Simpact Systems expands in Holland and Australia

\$3.9m contract

FOLLOWING an order from the California State Justice Department for two 1100/81s and two 90/80s to replace six Spectra 70 mainframes (CWI, September 14, 1978), the California state Department of Motor Vehicles has given Univac a \$3.8 million four year contract for two 90/80s for vehicle registration and driver licensing. One Spectra 70/6 will be replaced and the other 90/80 will run alongside two other 70/6s and a 70/5.



THE work of up to 30 draughtsmen can be handled by this computer drafting system developed at the University of Queensland in Brabben, Australia. Seen here with its developer, Dr Michael McLean, a lecturer in computer science, the system is based on a graphics display unit controlled by minicomputer. The software can carry out graphics processing like shading, zooming, lettering in

THE hardware configuration costs \$A45,000 and also includes a graphics plotter and a disc drive. The software costs between \$A12,000 and \$A15,000. More information about the system can be obtained from Dr McLean at Queensland University.

ICL France to double payroll

THE French subsidiary of ICL is performing at least as well as the company overall and, according to managing director Gérard Maillet, ICL France intends to increase its present turnover of over 350 million francs, £62 million, 2.7 times in the financial year 1981-82.

It also plans to double the number of people it employs to 2,000.

Talking to the French weekly Ordinaires, M Maillet revealed that orders in hand stand at about 320 million francs, 25% higher than at this time last year. This growth compares with an industry average of 12 to 15%, according to Maillet.

Commenting on the growth plans, Maillet said that they were more ambitious than those set by the parent company for its total business, but were in keeping with ICL's policy of seeking particularly rapid growth in continental Europe.

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Minis offering DBMS compared

Not so long ago the word "database" conjured up a vision of ever more IBM 370/168 systems becoming overloaded with IMS/VSE transaction processing throughput demands, causing their users to clamour for early delivery of an Amdahl 470V/8 or IBM 3033.

It caused some surprise therefore, when IBM announced last October a built-in database management system in the Control Program Facility of its new System 38, previously known as Project Pacific, which is offered in the UK from as little as £80,000, and at comparable prices in other European countries.

Yet System 38 is neither the first nor the cheapest (nor the most expandable) teleprocessing business mini to offer a database management system. At the end of 1978, at least three other mainframe manufacturers and three minicomputer manufacturers did likewise at prices competitive with, or well below, IBM's.

In this first Marketview of 1979, Fred Lamond discusses the reasons behind business minicomputer manufacturers' current interest in offering database management systems, and compares the leading systems currently on offer on the European market.

A DATABASE management system must have two essential features to be recognised as such. Its file descriptions must be entirely separate from the application programs which access them. And any record or item must be described only once and held in a single master location for updating purposes, regardless of the number of different applications programs that require to access it.

Both these principles apply to a small business as well as a large corporation. Indeed, the smaller the business, and the fewer the number of its files, the easier it will be to integrate them into a single applications independent DBMS.

Most of the business minis described in Table 1 should be able to run a DBMS with fewer problems than those that have beset large mainframes, especially IBM 370/158 and 168 systems running IMS/VSE.

Even so, any DBMS will always require a certain overhead in additional system software, main and disc storage on which to hold it, and CPU execution time in which to navigate through it. What are the benefits that justify this overhead?

The main one is a sharp economy in the time spent by the increasingly scarce and expensive applications programmers in maintaining and amending existing programs, once the files that these access have been separated from them. IBM has calculated on the basis of its large mainframe IMS users' experience that program maintenance effort is thereby cut by 75%.

On this basis, it is advising its typical System 3 users, who now employ one systems analyst and two programmers, that after conversion to System 38 and its CP/C with built-in DBMS, they will be able to use only one programmer to code the systems designed by two systems analysts, thus doubling the output of new applications obtained from the same manpower team.

Since IBM believes, not without reason, that the shortage of experienced systems analysts and programmers is the main bottleneck slowing down computerisation, its interest and that of its competitors in promoting the use of DBMS techniques is perfectly understandable.

Given the general desirability of adopting database techniques for business file design in computer systems of all sizes, how do the seven leading families of business minicomputers offering DBMS systems compare with each other? See Tables 1 and 2.

From a computer expert's point of view, IBM's System 38 is undoubtedly the most interesting. It is the only DBMS mini currently on the market to have been designed from the ground as an integrated hardware/software package to run database transaction processing as efficiently as possible. Its current competitors are all either general purpose real time minicomputers or small business batch processing systems that have had TP and/or DBMS software added to an earlier software structure.

As a wholly new design, Sys-

tem 38 pioneers a number of new features. The "virtual store" is one. It means that not just program instructions but data remain in store after they have been called down from disc the first time, until such time as the main memory space that they occupy is required by more urgently required instructions or data.

System 38 is also the first computer of any size to implement and market a "relational" database management system. This is regarded by DBMS experts as the trend of the future, because "relational" DBMSs are constructed in the manner of two-dimensional tables with no variable length or variably recurring items on any line that cannot be fitted into a predefined vertical column.

This allows DBMS file sections and records to be more easily displayed on VDU screens for inquiry, updating and amendment, and to be more easily interrogated speedily by multi-criteria query languages.

What matters most to the user is the price at which he can obtain a transaction processing business mini that will give him the transaction throughput that he requires. If he already possesses a computer system, he will look for a system that will allow him to keep as many of his existing applications source programs and as much of his hardware configuration as possible. And all users will be interested in the growth path that is offered them as their business and its DP requirements expand in the future.

The cheapest business minis with DBMS software are currently the SEMS SIS-T series from France, and the Siemens 6,620 and 6,640 from West Germany. Both are entry level systems that are price-competitive with IBM System 34 rather than System 38. Yet both offer a DBMS packaged in their basic system software, and a display screen oriented interactive database definition, query and updating language.

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As a wholly new design, Sys-

User support provided by	Manufacturer			Systems houses			
	IBM	ICL	Siemens	Honeywell and CII-HB	SEMS	Digital Equipment and compatibles	Norsk Data
Models offering DBMS	System 38 Model 3 Model 5	2903/40 2904/50	6,620 6,640	Level 6 Model 43, 47,53,57	SIS-T Model 200 Model 300 Model 400	DS 534 DS 560 DS 570	NORD-10
Maximum capacities (bytes)	1.5M 32M None	768K ¹ 507M 497M	128K 264M All	2M 1,152M 264M	512K 200M All	4M 1,400M All	512K 200M All
Off-line Storage/Dumping Media	12Mb diskette magazines or MT	5M, 20M or 60Mb disc packs	5M, 7.5M 13M or 65Mb disc packs	5M or 50Mb disc packs	5M or 68Mb disc packs	5M, 30M or 60Mb disc packs	NORD-10
Max number of workstations	256	100+	16	100+	16	100+	100+
Max number in simultaneous use	40	40	16	7	16	7	1
Online Communications with other CPUs:	Hosts	370, 303X	1800, 2800 IBM 370	7,000 series IBM 370	Series 60 all Levels, 2000, IBM 370	DEC 10, 20 IBM 370	IBM 370, 38 Univac 1100
Satellites	—	1500, System Ten, 2903/2904	6,610, 8,620/40	Other Level 6, MTS 7500	DS 308, 340, DS 500 series VT 78	SIMI	NORD-10
Database management system	CPI	IDMS	DBMS 600	SYMBAD	IDS/HI or TOTAL	IDS/HI	Yes
Codasyl-compatible	No	Yes	Yes	—	7	7	7
Display screen oriented query language	Yes	—	MASK-DBMS	INFO 6	TRIBU	—	—
Other programming languages	RPG III	Cobol, RPG II Fortran	Cobol, Fortran	Cobol	Basic, Cobol Fortran	Cobol, RPG Fortran, Basic	—

Table 1. Leading business minicomputers with database management systems in Europe (at start of 1979). Note: i = 192K 24-bit words

they retain?

ICL 2903 users are the luckiest in this respect. They can retain all their old peripherals, and field-upgrade any 2903 installed in the last three years to 2904 or 2904/50 specifications to run IDMS. Entry-level 2903/25 systems installed since April 1978 need to be upgraded only to 2903/40 specifications to run IDMS. All source programs in any language available on the 2903 range can be retained and only file descriptions need to be adopted to make them IDMS compatible.

Honeywell and CII-Honeywell Bull offer equally comprehensive field-upgrading facilities to Level 6 users wanting to run IDMS/HI on a Model 6/43 or larger system. Entry-level 6/23 users can retain all their old peripherals, and 6/33 users can even upgrade their CPU to 6/43 specifications. All source programs remain equally compatible.

This is still a much less radical conversion than that facing the IBM System 3 user replacing his system by a System 38. The only parts of his old configuration that he will be able to retain are 3410 and 3411 magnetic tape subsystems, and the 5424 Multi Function Card Unit for 96 column cards.

All other hardware components, including the CPU and

all disc drives, will have to be replaced by new System 38s.

The need to replace all drives on installing System 38 due to its reliance, like the smaller System 34, entirely on fixed disc drives, with a separate diskette magazine facility for file dumping for security purposes.

Users of the older Series 60 Levels 61 and 62 business minis are not offered IDMS/HI on their current configurations, but have to upgrade to Level 60 mainframes before they can run IDMS/HI. Such upgrading involves an exchange of CPUs and of some peripherals, but both RPG II and Cobol source programs can still be retained, subject to recompilation.

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The need to replace all drives on installing System 38 due to its reliance, like the smaller System 34, entirely on fixed disc drives, with a separate diskette magazine facility for file dumping for security purposes.

Users of the older Series 60 Levels 61 and 62 business minis are not offered IDMS/HI on their current configurations, but have to upgrade to Level 60 mainframes before they can run IDMS/HI. Such upgrading involves an exchange of CPUs and of some peripherals, but both RPG II and Cobol source programs can still be retained, subject to recompilation.

This is still a much less radical conversion than that facing the IBM System 3 user replacing his system by a System 38. The only parts of his old configuration that he will be able to retain are 3410 and 3411 magnetic tape subsystems, and the 5424 Multi Function Card Unit for 96 column cards.

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Phone phreaks claim to beat AT&T security

FOR some time there has been an argument about telephone tapping between the US telecomm giant AT&T and the phone phreaks, those persons who obtain unauthorised use of the telephone system (CW, November 9, 1978). AT&T says that it is impossible for outsiders to tap lines, while the phone phreaks say that certain exchanges make this easy to do — once you've got a blue box, the device that simulates the switching signals used by telephone company operators.

The technical term for the AT&T facility that permits operators to tap into a call is "autoverify." This feature is used, cautiously, by the telephone company to

enable operators to interrupt a call during emergencies or to determine whether a line is functioning properly. According to AT&T, autoverify facilities are designed with privacy in mind, and the procedures required of operators using autoverify supplement electronic safeguards built into the phone company's equipment.

The phone phreaks contend, however, that the security features are inadequate in many cases and the telephone equipment permits access to autoverify circuits from ordinary telephones through the use of a blue box. To prove their point, the phreaks have just published instructions for finding and using an autoverify circuit. The instruc-

tions were printed in TAP, the newsletter of the American technological underground.

According to the TAP article, some telephone company apparatus is subject to unauthorised usage. Certain telephone exchanges will connect operators — or phone phreaks — to autoverify circuits if they are reached via a tandem. A tandem is the computer used to control intercity and international telephone lines.

According to the TAP article, a phone phreak can determine the proper number sequence to reach an autoverify circuit by gaining access to a tandem and then testing out various prefixes — the

operator's equivalent of area codes — until certain signals are heard. The number that follows the code must be carefully selected to reach the autoverify facility. The TAP piece suggests that a phone phreak can afford to make mistakes while trying to connect to an autoverify circuit — after all, the calls are free.

Sometimes an autoverify circuit will stay connected for only a short time, according to TAP, and on other occasions the phreak will find that the conversion he listens to is scrambled. But every once in a while the phreak will be able to listen in on calls through the supposedly secure facilities of AT&T.

Japan poised to win bigger markets

JAPAN's future in the computer business "is a central issue for the future success of the US computer industry," according to a leading US computer industry analyst, Gideon Gartner.

Gartner also believes that ongoing relationships between US suppliers of plug-compatible machines and Japanese manufacturers are just the first wave of Japanese penetration of the US market.

Gartner is the main computer industry analyst at Oppenheimer and Co, the Wall Street

stockbrokers. He has just visited Japan and believes that the Japanese will sell nearly twice as much data processing equipment in America as their official government forecasts indicate.

The official forecast calls for \$1,700 million in computer sales to the US by 1985, but Gartner calculates sales will actually reach \$3,000 million. This, he points out, will be 35% of the total volume of the Japanese computer industry.

Currently, Japan's computer manufacturers are selling

mainframes that compete directly with those made by IBM. So far, this is being done by arrangements between Japanese companies and US manufacturing or marketing organisations. ICL markets IBM-compatible mainframes made by Hitachi, for example, along with systems built by America's National Semiconductor. Fujitsu manufactures assemblies used in the production of Amdahl computers.

Other links exist between Japanese companies and

manufacturers of equipment that is not directly compatible with IBM's offerings. Examples of such arrangements include the pact between Siemens Fujitsu (which will yield machines similar to IBM products), technology exchange agreements between ICL and Hitachi, similar exchanges between Honeywell and both NEC and Toshiba, and financial ties between Univac and both OKI Electric and Mitsubishi.

The Japanese will not necessarily continue to restrict their

activities to partnerships with companies from other nations, however. Independent computer marketing efforts could follow the Japanese success in the microprocessor and memory chip business, the increasing sales of Japanese peripherals and the growing Japanese penetration of their office equipment markets.

Eventually the Japanese may become strong competitors in a full range of data processing equipment and related products. This eventuality, according to Gartner, confirms "the validity of IBM chairman Frank Cary's apparent preoccupation with Japanese technology and management acumen."

Nevertheless, IBM Japan remains the largest computer exporter in that nation, a fact that must concern native manufacturers.

The Japanese, who have already demonstrated their ability to develop hardware, must catch up in software if they are to become a major factor in the computer industry. Gartner states that the Japanese will soon be able to develop good software, although they cannot yet equal that of American companies.

However, Gartner expects the Japanese will try to use electronics in lieu of programming wherever possible. As software costs skyrocket, this strategy may pay off handsomely.

Your computer training can be plain sailing.

DBMS comparison

From page 20

language, RPG may well remain the only language in which System 38 users can write programs to process DBMS files.

How much of a compatible growth path do the various competing systems offer, especially in database file storage capacity on online disc bucking storage?

Not unnaturally, the shortest growth path is on the cheapest system — SEMS SIS-T series, limited to a maximum online disc capacity of 200M bytes. Norsk Data follows with 264Mb on the NORD-10S; this is also the maximum capacity of Siemens 6,640 disc files, whose users may be able to upgrade to the larger 7,000 mainframe series if its DBMS is compatible.

After this, however, the next least expandable DBMS business mini is the new IBM System 38, despite its comparatively high entry level price. Its maximum file capacity is currently 384 Mbytes. This may be raised in the future.

This compares with maximum online file capacities of over 1 billion bytes on both Honeywell's Level 8 and DEC's DS 500 series. The ICL 2904/50 is limited to a current maximum online capacity of just over 500M characters, but a fully machine code compatible ICL 2956 mainframe running under DME-2 could offer up to 3,600 characters of online disc storage.

Neither the IBM System 38 nor the SEMS SIS-T currently offer this facility. Nor is there any guarantee that either system will offer such facilities in the future.

In the case of System 38, omission may be designed to prevent IBM General Systems Division's System 38 from competing against the Data Processing Division's \$100 million Information System designed specifically for such network applications.

NEWS FROM AMERICA
BY
HESH WIENER

Progress has been made in developing a decision model for deciding whether distributed processing represents the best organisational approach for a firm in terms of meeting objectives and making optional use of hardware, software and personnel resources. MORRIS EDWARDS describes a preliminary model developed at the MIT Sloan School of Management.

ADVANCES in software and mini/micro technology have removed many of the economic and technical constraints to implementing distributed processing systems. One major obstacle remains, however, and it deals with management.

Specifically, it is the lack of recognised guidelines for deciding if distributed processing represents the best organisational approach for a firm in terms of meeting its objectives and making optimal use of hardware, software and personnel resources.

Now, at last, some progress is being made in developing a decision model to handle this issue. Working at the Massachusetts Institute of Technology Sloan School of Management, Dr John Rockart, director of the Center for Information Systems Research,

lar activities.

Since each process is an independent one, the decision to centralise or decentralise can be made independently for each, and Dr Rockart strongly recommends this approach. "We feel that an organisation should not decide at any one time whether to centralise or decentralise its entire information system function."

For systems development and operations, the MIT model breaks down the centralisation/decentralisation decision by grouping applications with common characteristics and requirements into Logical Application Groups, Figure 1.

"Because LAGs are relatively independent in both data and areas of concern, it is possible to treat each one separately," explains Christine Bullen, assistant director of the Center for Information Systems Research.

The final partitioning of the decision deals with organisation structure. One LAG may concern several sub-units, and when these differ in nature and characteristics, a separate decision can be made for each.

Having gone through these

steps, one can determine how much centralisation or decentralisation is appropriate for a specific systems management process for a defined group of applications within a chosen organisational sub-unit.

The decision is made by developing alternative hardware and software configurations and evaluating them in terms of cost, time and effectiveness. To limit the range of alternatives, however, Ms Bullen recommends first determining the "effective range of solutions."

For this determination, systems development and operations are further divided into sub-processes and resources. For instance, systems development encompasses four major sub-processes, or activities: functional design, detailed specification, programming, implementation and maintenance.

"It is not necessary that each sub-process be centralised or decentralised to the same extent," Ms Bullen notes. "Yet, these sub-processes are interrelated and must be considered in conjunction with each other." For systems development activities, the major resource is considered personnel, since items such as equipment and budget are far less critical.

For systems operations, the sub-processes are: editing and control, updating, processing and reporting. Hardware, software and personnel are defined as one major resource since all must be centralised or decentralised together; the second major resource is the organisation's database.

Within the MIT model, decision tables are used to specify the sub-processes and resources involved in each decision and to graphically represent the range of alternative configurations appropriate for each.

The second decision-making tool, and one of the more innovative elements of the model, is a "factor table," which is based on the notion that certain universal conditions and factors influence the decision toward or away from centralisation.

From their empirical studies, the MIT team found the major factors influencing the centralisation/decentralisation decision include the characteristics of the organisation, its

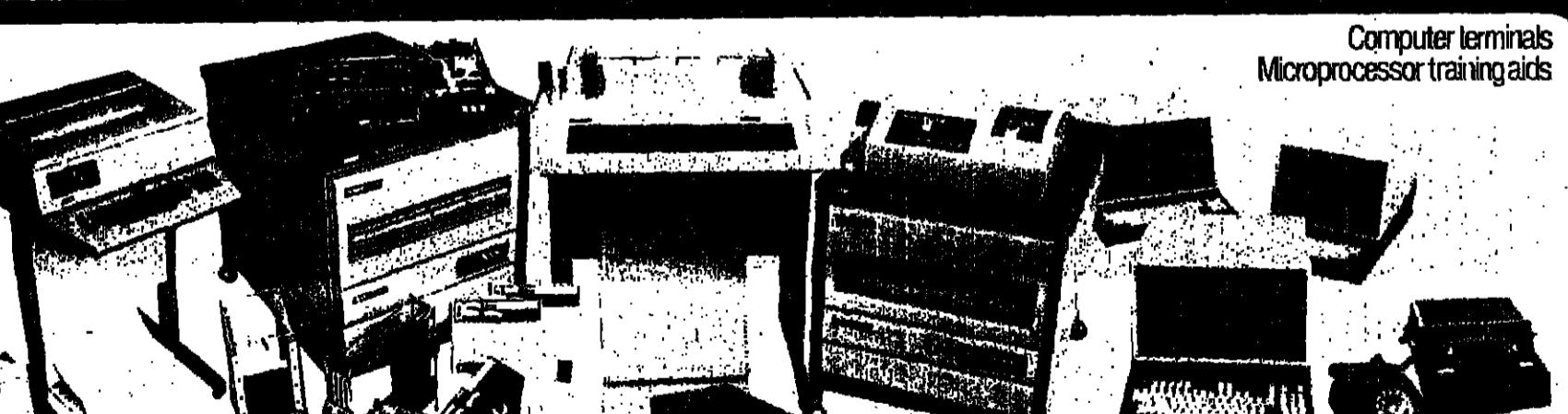
resources to which each effectiveness factor applies, Figure 2.

Visually, a circle is used to indicate a factor that favours centralisation, while a square represents factors favouring decentralisation. How strongly the factor impacts the overall decision is represented using large and small circles and squares. With critical factors, the circles or squares are filled in.

Meanwhile, the MIT researchers are studying a simplified factor table to identify which key factors are present in the majority of cases, and which cause the decision to turn one way or the other.

Firms interested in working with the MIT team on this project should contact its director, Dr John Rockart at 50 Memorial Drive, Cambridge, MA 02139.

Figure 1: In the MIT decision-making model, the data processing systems function is broken down into its three basic processes, and decisions concerning systems development and operations further partitioned along the lines of common applications and organisational sub-units.



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NEWS IN BRIEF****CDC scores
in France**

UNDERLINING the potential of the large-scale Control Data Cyber 170 series mainframes in commercial as well as scientific applications, CDC has scored a major victory over NCR in France. The regional agricultural credit bank in Bouche-du-Rhone is to replace its NCR Century 300 mainframe with a dual-processor CD Cyber 174.

Yugoslav contract

A MAJOR contract for NCR Criterion 8500 miniframes has been placed by the Associated Commercial Bank of Sarajevo in Yugoslavia. The order includes nine Criterion V-8500s, 151-8250 small business computers, 530 counter terminals and 140 back-office terminals, to be installed throughout the bank's 22 branch network. The system is to handle customer accounts, foreign exchange and loan processing.

Korean distributor

DISTRIBUTION of the Honeywell Level 6 line of minicomputers in Korea is to be handled by Gold Star Co of Seoul, the company which recently entered a joint venture with American Microsystems, under which AMI will design integrated circuits for use in Gold Star electronic entertainment and domestic appliance products (CW, August 10, 1978).

In-house software

JAPANESE computer users are increasingly resorting to in-house application software development. In survey conducted by the Japanese newspaper Nippon Keizai Shimbun, 238 large Japanese companies were polled and 72 per cent said that they now developed their software in-house, and the average Japanese installation now employs 150 computer-related personnel, including 74 programmers and analysts.

DG profits up 42%

IN the year to September 30, 1978, Data General made a net profit of \$40 million, up 42 per cent on turnover up 47 per cent to \$800 million compared with the same 12 months of 1977.

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Telex: 547335**COMPUTER WEEKLY INTERNATIONAL****Major expansion of DP space at Hanover**

A MAJOR expansion of the exhibition space for computer equipment is under way in preparation for the 1979 Hanover Fair. The CeBIT section of the show, which houses office and data technology, will occupy three halls instead of the usual two. The additional location is Hall 2, which joins the enormous Hall 1 and the smaller Hall 18. All three will be linked with first floor level covered walkways.

Software and services companies will be exhibiting in force at Hanover for the first time, and over 30 have already booked

space, most of which will be housed in Hall 18.

The other main feature of the show this year will be the automated office, a joint presentation by all CeBIT exhibitors designed to "reduce the disquiet" among members of the general public about the widely forecast revolution in office methods and systems. According to the organisers, the beneficial changes in "social, income and working conditions" will be stressed.

The show opens on Wednesday, April 18

and closes on Thursday, April 26, 1979. The

organisers are investing 30 million Deut schmarks in improvements to the fairground.

Meanwhile the organisers of Europe's other big data processing and office equipment show, the Paris-based Sibc, report that over the opening three "professional" days, attendance was up 14 per cent, foreign visitors were up 8 per cent and the total attendance was 290,000. Sibc 1979 will run from Wednesday, September 19 to Friday, September 28.

Powerful line-up of mainframes for plum Australian contract

THE world's most modern and most powerful general purpose mainframes are lining up to compete in a re-run of the contest for the plum contract for the Australian Bureau of Statistics. Fujitsu won the contest last time around, but had the prize snatched away following lobbying of the government by IBM Australia — an outcome exclusively forecast in Computer Weekly International (November 10, 1977).

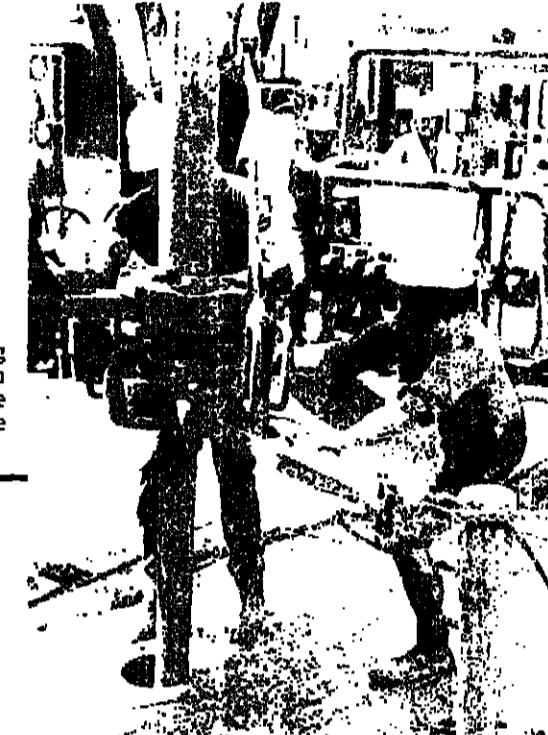
The contest is a particularly significant one, because Australia is the only developed computer market where all the world's major mainframe manufacturers apart from Siemens compete head-to-head.

However, there is some doubt about ICL putting in a bid. A spokesman said that the company would not spend on making a bid unless it felt it stood a good chance of winning. NCR is also not expected to bid, the main reason being that its new 8600s will not be ready in time.

The new tender specification is for equipment worth \$A20 million, about £1.2 million, to replace the Canberra-based bureau's CDC 8600. The requirement is for a minimum two processor machine with about 10 Megabytes of main memory, 20,000 Megabytes on disc, and an on-line bulk storage system with at least 168,000 Megabytes of storage.

The ability to upgrade the installation is a key requirement, and both IBM and Fujitsu will be offering machines not available at the time of the last round.

Fujitsu bid the M-100 last time, and IBM the 168. Fujitsu should still have the edge in that the M-200, being available in configurations up to four processors, is more flexible than the IBM 3033, which comes with one or two CPUs, and offers no cost advantage in the dual processor

**Eclipse
system
aids oil
search**

The largest model in the Data General Eclipse line, an M/800, has been installed by the Woodside Petroleum Development Pty in Perth, Western Australia, to take over the online digitizing and plotting of seismic data collected from the North West Shelf in the Indian Ocean. The shaft is a source of both oil and natural gas, and the processing work was previously done at several computer bureaux. Our picture shows operations on board the Woodside derrick, in the Indian Ocean.

Asian scripts on Tally printer

A PRINTER specially designed to produce Middle Eastern and Asian scripts has been introduced by Tally. Called the T5000 Expanded Matrix printer, it is a modified version of the established T5000, and uses the same helix and hammer print mechanism.

The difference between scripts like Farsi and our own alphabet is that the characters are linked together, and the shape of these links affects both the meaning of words and the grammar. This linking means that devices which print clear-cut characters can only handle a limited range of meanings.

Tally has overcome this limitation by developing a special matrix 14 rows deep and 15 wide. Each matrix immediately adjoins the next to give a printing area which is continuous across the page. The characters themselves are slightly larger than in the standard T5000, with 110 characters across the page instead of 132, and four characters to the vertical inch instead of six. The output speed is 300 lines per minute.

Although specially designed for the Middle East markets, the qualities of the printer make it suitable for almost any alphabet, and also for graphs, music or

printed portraits. New character sets can be specially produced at a cost of a few hundred pounds in a few weeks. They are stored within the printer on a read-only memory.

The T5000 Expanded Matrix printer will be sold to end-users for less than £5,000, with discounts for quality orders.

Greek exchange

STORED program controlled telephone exchange equipment has been ordered from Thomson CSF by the Greek state for its transit exchanges in Athens. Worth £2.2 million, the MT 20 system will be installed next year, and will come into service in early 1980.

Carter crackdown on cheats

PRESIDENT Carter and members of his cabinet have expressed warm praise for three US government projects that are tracking down cheating and fraud against welfare programmes by matching up personal records on separate computers.

According to the President, many millions of dollars are already being recovered from the estimated \$7 billion lost annually to welfare cheats, dishonest doctors and pharmacists, and defaulters on student loans.

Carter was speaking at a conference on Fraud, Abuse and

Error organised by the Federal Department of Health, Education and Welfare.

There are three anti-fraud computer projects running at the moment: Project Match, which is tracking down government employees who are illegally receiving social security benefits; Project Integrity, which is aimed at dishonest health service providers under the federal Medicare and Medicaid programmes; and Project Cross-Check, which is chasing those who have defrauded on repayments of student loans.

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Helsinki \$6m order for Univac

KESKO OY, the Finnish wholesale corporation, has installed a Univac 1100/82 to handle its inventory control, warehouse operation, and statistical work and forecasting applications.

Valued at about \$6 million, the order was placed with Oy Saab-Universit AB and the 1100/82 is

situated at Kesko's Helsinki headquarters.

This latest system is in addition to two Univac 494s acquired by Kesko over the last 12 years, together with 190 Univac 400 terminals and two distributed communication processors.

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**Additions to
Modcomp
line on
the way**

AT the last count, Fort Lauderdale minicomputer Modcomp had sold 75 of its new Classic 700 line of minicomputers, 30 per cent to customers new to Modcomp. Two of these, Honeywell and Harris, have competing minicomputer lines of their own.

According to president Ken Harpley, further additions to the line will be made shortly. There are currently three models, the one Megaword 7470, the 7800, and the compact 7810.

Modcomp is currently being wooed by two unnamed companies — a large multinational wanting to acquire the entire company, and a private US company wanting a 20 per cent stake.

The New Year is a time for resolutions, new beginnings, a period for reflection, for re-examination of motives, needs, desires, requirements. A time to ask difficult and self-searching questions — and a time when many people think seriously about looking for a new job.

One of the reasons clearly is the very informality of the computer industry: there is no clear-cut educational path that leads to a career in the computer industry. At any DP manager's convention, accountants rub shoulders with physicists, classicists with electronic engineers.

The universities were slow to offer computer courses and, when they did, acceptance was hampered by a general feeling within the industry that on-the-job training was more valuable than formal education.

The 171 will run a large scale weather prediction model which will be linked in via the infinite to the World Meteorological Organisation's network. Eventually it will be connected to the giant Cray 1 system at the European Medium-Range Forecasting centre at Shinfield Park, Berkshire (CW, January 12, 1978).

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This is no longer true, and the colleges which offer computer courses are now turning out graduates capable of being usefully employed almost as soon as they start.

But old prejudices die hard, and the last person to hear about changes in the profile and requirements of the employment market is lamentably often the man or woman saddled with the title of careers adviser in addition to his or her normal duties.

The fact remains that the requirements for entry into a computer-related occupation are so open and ill-defined that the case for a computer career often goes by default.

But if, as computer professionals, we accept the fact that the desperate shortage of trained people threatens our own careers by hastening the day when the servant becomes master, the machine assumes the power to make us redundant. It is incumbent on us to ask prospective employers more searching questions than is usual.

In our highly-taxed world, the fringe benefits, the assistance with removal expenses, help in finding somewhere to live are all vitally important; but, in the seller's market in which any computer person worth his salt resides, they can be taken almost for granted.

But what is the prospective employer doing about helping to solve the problem of too many jobs chasing too few people?

The point is that concern about the industry in which we work, about the job prospects, training opportunities, for all staff

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New Year—New Jobs

A paradox of the present levels of unemployment is that the DP industry is crying out for hardware. In this article, Computer Weekly International Editor Tim Palmer suggests that one of the reasons for this is the lack of a clear-cut path to a DP career, which probably starts with lack of information at the school careers adviser level.

He says the New Year is a good time to take stock of one's lot and consider looking elsewhere. On this point, Palmer urges job applicants to look beyond big salaries — these can be taken for granted — and consider what else a new job can offer.

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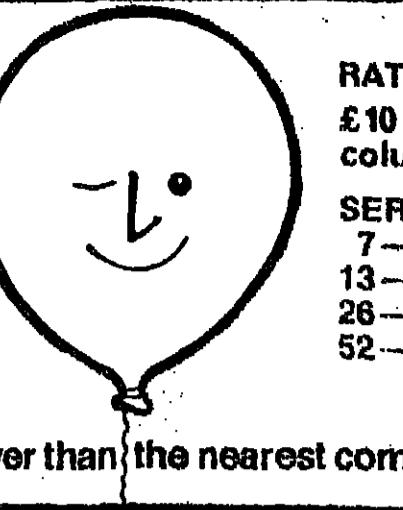
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IBM MVS SYSTEMS PROG - HOLLAND
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HONEYWELL 6000/5150 PROG - GERMANY
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ICL 2900 VME/B COBOL
VACANCIES IN UK/EUROPE STARTING IN EARLY 1979 LONG AND SHORT TERM
REQUIREMENTS FOR PROGRAMMERS, ANALYSTS AND SYSTEMS PROGRAMMERS

Please contact Richard Kaluzynski, Neil Williams or Suzy Gillam: 01-491 4706 or 01-439 3411.
All vacancies are open to both male and female applicants.

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Staff Services Division of BOC Datasolve Group and
a member of Computing Services Association.

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JBA

Project Manager

Central London

circa £9,000

A requirement has arisen for an experienced Project Manager to take responsibility for systems development of a Sales and Stock Accounting project in the operating company of an extremely large and diverse manufacturing group. The company is currently developing an extensive range of both real-time and batch distributed database systems, based on a network of PDP-11/70s and an IBM 370/138. Applicants must have depth of experience in project management commensurate with the ability to control a major development project and a team of highly motivated professionals.

This is a positive opportunity to work for an excellent organisation where career prospects and the employment package are considered to be above average.

Contact: Margaret Stevens

PDP Programmers

London/Home Counties

£8,500-£9,000 + Expenses

This client is a city-based software house which is continuing to attract development projects from a prestigious and growing client base. On joining their team of Consultants, Analyst Programmers with a good knowledge of RSTS/E and BASIC + (and possibly MACRO-11) will have the opportunity to significantly contribute to the growth and expansion of this still small and versatile organisation. Self-motivation and the capacity for hard work and commitment will be extremely well rewarded both financially and in terms of increased responsibility and status.

Basic salaries range from £5,000 to £8,000 according to experience, with bonuses and profit sharing providing around £1,500 pa extra. Each Consultant has the chance to earn a stake in the company.

Contact: Andy Wright

Support Analysts

West of London

neg to £7,000 + car or allowances

If your present responsibility is to implement commercial systems and you feel that the next challenge is to join a sales support team then our client is currently able to offer such a position. The company manufacture mini computers and has enjoyed a steady growth over the last few years, a pattern which is expected to continue into the future. This position requires that candidates have a good grounding in basic d.p. disciplines as the company market a wide range of both tailor made systems and standard packages for general commercial usage. The successful applicants will be able to work on his or her own initiative, and will be happy to fit into a small and friendly team.

Career prospects are dependent on the success of projects and resulting expansion.

Contact: Mike Creamer

Inter-Computer Communications

Cambridge

£6,000-£8,000

Applicants of degree level in Computer Science or Electronic Engineering with at least 3 years project experience in a University or industry are invited to consider this well established company of specialist consultants and systems designers.

Project management potential, an interest in word processing systems and a thorough proven ability in writing Assembler are required. Necessary ingredients of the consultant status will be self motivation, an innovative nature and a business-like approach with clients at all levels.

Attractive salary package and achievement bonus is offered to employees.

Contact: Mike Creamer

For further information on any of the above vacancies please contact us.

If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants
16 Maddox Street, London W1. Tel: 01-491 4478

Support Programmer/Designers

Edgeware, Middlesex

£6,000 to £8,000 +

These positions require experience of ASSEMBLER programming, preferably gained on mini or micro systems, and a good knowledge of commercial applications. The company is doubling the size of its customer support team in order to cope with the ever-increasing number of orders for its micro-based turnkey systems.

The job involves advising clients on their requirements, developing proposals, designing and writing systems, installing and setting up the completed systems, and training customer staff. A full consultancy role for self-starters with ambition and drive.

A company car could be one of the benefits - an exciting opportunity in this new area of the market.

Contact: Andy Wright

Business Systems Consultant

South London

up to £7,500

Our client, one of the major computer manufacturers in the UK, has opportunities for Business Systems Consultants to join a pre-sales team based in South London.

Applicants should have at least four years experience in data processing with the majority of that spent in the design and implementation of commercial applications. Candidates should have undertaken feasibility studies and been involved in defining user department requirements. The Company is looking for staff with maturity, sound business background, diplomacy and the ability to meet objectives with minimal supervision.

Excellent salaries, car allowance and bonus scheme.

Contact: Jim Baker

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UP TO £15,000

We specialise in real time, automation and industrial control systems. We are looking for staff experienced in these fields who enjoy a challenge, take pride in their work and wish to join a dynamic systems company.

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Marconi Radar is a leader in the field of sophisticated simulation, instrumentation and associated electronic systems.

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Software appointments are being made in the very high technology field of computer generated imagery in which the software and electronics are developed together.

Senior electronics appointments are also to be made, both in CGI and in the simulation group responsible for operator and team trainers.

These positions carry attractive salaries and other benefits which include assistance with removal expenses.

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Male or female applicants should send brief career details to:

Nick Donovan, Personnel Officer,
Marconi Radar Systems Ltd.,
New Parks, Leicester, LE3 1UF.
Tel: Leicester 871331.

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Holland

SYSTEMS PROGRAMMERS

£20,000 P.A.

to be responsible for all aspects of system support including system generation, development and maintenance in an OS/VSI environment supporting IMS.

CDS is an established consultancy with offices in the UK and Switzerland. The above assignments are to supplement our existing work for an internationally respected client in the Netherlands and will be on a 6 monthly renewable contract basis. For further information please contact Brian Blatton, on 0345 781226 during office hours or on 0345 63866 evenings.

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370 Software Support 

IMS SPECIALIST

£20,000 P.A.

to work within a small specialist team responsible for providing a consultative service to development groups on all aspects of database and data communication design.

Programmers/Analysts Systems Analysts

West of Scotland

Our client is a major international Company manufacturing high volume consumer products for the UK and European markets.

The D.P. functions close involvement in the design and implementation of a wide range of computer applications coupled with the expansion into Real Time systems has created openings at all levels in the development team.

Programmers and Programmer/Analysts

With 1-2 years commercial programming experience, and currently seeking career development into system analysis. Experience of R.D.G. II would be an advantage but is not essential.

Systems Analysts

These positions require more experienced individuals, ideally with a good grounding in programming and some experience of systems analysis in a commercial environment.

The work is varied and interesting, requiring technical expertise plus the ability to communicate effectively with all levels of management.

An excellent salary and benefit package including re-location expenses will be offered.

Applications in writing, giving full career details to Position Number PGA 899, Austin Knight Limited, 176 St. Vincent Street, Glasgow G2 8SG.

Applications are forwarded to the client concerned therefore companies in which you are not interested should be listed in a covering letter to the Position Number Supervisor.

THE HATFIELD POLYTECHNIC Computer Centre COMPUTER OPERATOR and SENIOR COMPUTER OPERATOR

We are presently installing three new multi-access computer systems to support over 200 simultaneous users and have two vacancies in our operations team which works on a three-shift basis. Although preference will be given to candidates with experience of DEC equipment for the senior post, the essential requirement for both posts is a sound background in computer operations.

The computers (a DEC 1081, DEC 2020 and PDP 11/770) will be housed in a new building which has excellent staff facilities.

Salaries:

Senior Operator £4423-£4818 (half) - £8488 (AP 3/4)

Operator: £3370-£3803 (half) - £4338 (AP 3/4)

including shift and other allowances. Trainees may be appointed at a lower salary.

For further details and an informal discussion ring Gordon Brand on Hatfield 68100 ext. 407 or write to the Staffing Officer, The Hatfield Polytechnic, P.O. Box 100, Hatfield, Herts. Please quote reference 151.

Closing date for applications January 24, 1979.

Both posts are open equally to male and female applicants.

Numerate Engineers Analysts Programmers

The System Problem Analysis Group of Ferranti Computer Systems Limited is an expanding organisation that undertakes analytical and scientific programming tasks for external agencies (in the UK and Europe) and in support of Ferranti's Real-Time System Projects:

Our Work Includes:

- * Signal Processing
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- Gun and Missile
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- * Scientific Data Processing and Mathematical Analysis
- * Control Systems
- Continuous and sampled
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- Design and implementation

We require new and experienced graduates in a numerate discipline to take part in our future expansion. Successful applicants will be capable of:

- * making significant contributions in new fields
- * communicating effectively
- * liaison with customers

We can offer:

- * high job interest
- * flexible working hours
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- * friendly, informal atmosphere

If you feel you can meet the challenge that our kind of work offers, then please ring our Recruitment Officer on Bracknell 3232, ext. 471, or write quoting ref. no. D/884/CW to:-

The Personnel Officer, Ferranti Computer Systems Limited, Western Road, Bracknell, Berkshire.

These posts are open to male or female applicants.

FERRANTI
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Our projects cover the country. Our largest regional office is in Manchester, where the client list and prospects match the dynamic progress of the Division as a whole.

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Software sales experience is essential. Experience of OEM systems sales is highly desirable, from either the manufacturer or the system supplier side.

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DUE TO OUR CONTINUALLY CHANGING REQUIREMENTS WE ARE ALWAYS INTERESTED IN HEARING FROM COMPUTER PROFESSIONALS WITH A SOLID D.P. BACKGROUND TO WORK WITH MAJOR CLIENTS WHO ARE ALWAYS ABLE TO OFFER A WIDE VARIETY OF INTERESTING & CHALLENGING REQUIREMENTS.

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COBOL PROGRAMMERS European Assignments

IBM DOS or OS

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Total capability from the
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Focus Computer Services Limited is one of the leading names in Contract Services to the Computer Industry. We are currently looking for a Contract Sales Manager to manage our expanding Systems and Programming Contracts Division.

This position would suit a hard-working and self-motivated person who has perhaps spent (a minimum of) one year as a Contract Sales Consultant, and now feels ready to move into a more responsible position; you will have complete control of this Section with full advertising back-up.

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N.W. LONDON **£4000-£6500**

1-4 years' experience

These positions offer positive career prospects to PROGRAMMERS and ANALYST/PROGRAMMERS seeking a greater challenge, more advanced technical experience and additional responsibility.

Having successfully computerised a number of accounting and management information systems, the Company is now making a major hardware enhancement to assist with the Group's three-year expansion program throughout Europe. Working within a small specialist team the successful candidates will have the opportunity to broaden their experience on unusual applications using the latest techniques and equipment.

Applicants should have from one year's programming experience using any commercial language and possess the potential to progress within a progressive and expanding organisation.

Ref. N1/1101

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PROJECT LEADERS & IBM
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Analyst/
Programmer

C £5,500 — Cheltenham

We have an ICL 2003 and ED8 30*.
We seek an experienced Analyst/Programmer (male/female) who can quickly contribute to the current projects such as: on line order entry, shop floor data collection (using 7502 communications kit) and implementation of a new payroll package.

Successful applicants should preferably have experience of Cobol and On Line Working. This Sunday Shift position carries an attractive remuneration package. Please write with brief details to Mr. B. M. Charfield, Personnel Manager.

Indalex Limited Kingscliff Lane, Cheltenham
Telephone 21641

JPI, inc lld

MYRIAD

PROGRAMMER/ ANALYST

SOUTH MIDDLESEX

c. £5000

If you have gained one year, or thereabouts, COBOL programming experience, you may now be seeking your first move into systems analysis. This position represents an ideal opportunity for an enthusiastic person to gain comprehensive problem-solving experience in a highly user oriented role within a progressive installation. Extensive use is made of on-line programming and data communications to develop sophisticated systems.

A background on any manufacturers' hardware will be acceptable since full training is provided. A first-class starting salary and valuable fringe benefits make this a highly beneficial career move.

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SLOUGH

£6000-£7000+

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The company is a large national commercial organisation. Analysts and Senior Analysts are required now to augment our client's expanding development team. Current hardware comprises an IBM 370 running under DOS/VS with on-line and database capabilities.

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Ref. NW2/1101

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computer appointments

CONSULTANT ANALYSTS &

PROGRAMMERS

to £8,000 + Benefits

AMERSHAM, LONDON and Home Counties

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The Consultancy Division requires staff to work with mainframe computers on the full range of commercial applications from small batch projects through to large on-line databases. Candidates must therefore be prepared to travel to different locations. Travelling expenses will be paid between home and the client site. Analysts should have a broad commercial background. Programming applicants should have experience in COBOL, PL/I

The Mini Applications Division requires Analysts and Programmers at all levels to work on mini computer projects. This Division is based in Amersham and Chesham, Bucks, primarily using Hewlett Packard and Data General equipment. Good commercial experience on any mini machine using COBOL would be ideal.

To apply for these positions, or for an informal discussion, please ring Clive Wright on 01-242 9356 or write to the address above, quoting Ref. 491/CV. If it would be more convenient to telephone in the evening, or during the weekend, ring East Grinstead (0342) 2220.

One will be holding an open evening in London later in January, to which all interested applicants are invited. Please watch this paper for further details or ring Clive Wright on the above number.

RSX - 11M

MACRO II, FORTRAN

COBOL
CROYDON

RSX, DOS

15.5-7.4K p.a.

The Mini Real-Time division of this important Client based in the North West London area has openings for several programmers with experience of RSX-II Real-Time systems. The applications are real time and should have very sound experience of either Macro II or FORTRAN. A considerable amount of additional expertise relating to retail systems will be considered especially welcome. Our Client offers a young dynamic environment with a company car and free H.P.A. Interviews will be held along with important other firms here. The working environment is excellent, interviews will be held any time during January.

Would you like to join a Computer company based in Croydon? Part-time COBOL programming experience is the key to finding your client in this fast growing field of Data base systems. Necessary training will be given if not applicable. Both OS/360 and PDP programmes are required and to a minimum of a number of Analyst/Programmer. A Management background would be an advantage but not a pre-requisite. Salaries will be in accordance to previous experience but extra will be given for potential. A subsistence allowance is available in addition to a wage of up to £1000. This total package is in our opinion very attractive.

AUCKLAND NEW ZEALAND

APPLICATIONS ANALYSTS PROGRAMMER ANALYSTS

IDAPS is an independent bureau specialising in insurance, finance and manufacturing distribution. Founded in 1970 as the data processing arm of the New Zealand Insurance Group it is now one of New Zealand's most respected data processing organisations. IDAPS attribute their success firstly to their people, secondly to their specialist knowledge and thirdly to the high quality of their information technology.

The equipment comprises an IBM 370/148 in Wellington and a 370/136 in Auckland. A communications network links the computers to 18 centres throughout New Zealand. Their main language is COBOL.

They require a number of applications analysts and programmer analysts in their Auckland centre. A background based on IBM equipment and methods is an essential requirement. Candidates will be ideally in the 23 to 35 age group and will wish to settle in New Zealand.

Your rewards, as may be expected from a successful people company, will be a fully competitive New Zealand salary (£8,000 to £9,000 per annum, reviewed after 6 months) plus excellent fringe benefits. These, plus financial assistance with relocation, will be detailed in the product and service.

Prescot Computers specialise in recruitment for New Zealand and are assisting IDAPS in this assignment. Interviews by Prescot and/or a senior member of IDAPS will take place throughout January. We would prefer to interview you in your own locality if this can be arranged, and Stipper at 01-242 2142 or, if you prefer, write to him at:

Prescot Computers Limited
8 Bloomsbury Square
London WC1A 2LP

Tel. 01-242 2142

Telex 23110

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COBOL
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RSX, DOS

15.5-7.4K p.a.

The Mini Real-Time division of this important Client based in the North West London area has openings for several programmers with experience of RSX-II Real-Time systems. The applications are real time and should have very sound experience of either Macro II or FORTRAN. A considerable amount of additional expertise relating to retail systems will be considered especially welcome. Our Client offers a young dynamic environment with a company car and free H.P.A. Interviews will be held along with important other firms here. The working environment is excellent, interviews will be held any time during January.

Would you like to join a Computer company based in Croydon? Part-time COBOL programming experience is the key to finding your client in this fast growing field of Data base systems. Necessary training will be given if not applicable. Both OS/360 and PDP programmes are required and to a minimum of a number of Analyst/Programmer. A Management background would be an advantage but not a pre-requisite. Salaries will be in accordance to previous experience but extra will be given for potential. A subsistence allowance is available in addition to a wage of up to £1000. This total package is in our opinion very attractive.

RSX - 11M

MACRO II, FORTRAN

COBOL
CROYDON

RSX, DOS

15.5-7.4K p.a.

ANALYST/ PROGRAMMERS

MOORGATE £5,000 - £7,500

Our client is the major multi-national supplier of NETWORK SERVICES; because of the continuing growth within the UK, the central implementation group has additional staffing requirements at all levels. All positions offer:

- ★ PROJECT PARTICIPATION FROM DESIGN TO HANDOVER
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- ★ MODERN OFFICE FACILITIES

As they provide continuous training utilising modern educational facilities, re-inforced by extensive departmental experience, they are seeking Analyst/Programmers with 18 months' to 4 years' experience with high level languages on any hardware.

For further information please telephone **GEOFF MARSH** on 01-499 4501.

Ref: RW 2/1

**CHOOSE WHERE YOU WORK
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ANALYSTS AND PROGRAMMERS to £7,500 + Benefits

A young dynamic Systems House with several U.K. offices, is looking to 1979 as its third successive year of growth.

Until now all of its systems have used Mini computer hardware, however, in keeping with its style they will be diversifying into new markets in 1979. This continued growth is thus your opportunity to move into the latest software and hardware technology.

Analysts who can demonstrate a commercial systems background on Minis, particularly PDP 11s, and Programmers who possess a sound knowledge of BASIC are the technical requirements. Equally important is the ability to work in a team environment to tight deadlines with some of the most professional people around.

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Don't miss this opportunity — phone me, **GEOFF MARSH** on 01-499 4501 NOW

Ref: RW 2/3

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47/48 New Bond Street (Entrance in Maddox Street)
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SOFTWARE PROGRAMMERS

to £8,000 + Relocation

MICROS IN THE HOME COUNTIES

One of the world's major corporations have been involved in creating a new generation of high technology Voice and Data Communication Systems. The 1980's will see a radical change in our public and private telecommunications facilities.

To make this change happen generic software has been designed to control these multi-microprocessor based computer systems.

Technically, you should be able to demonstrate a knowledge of block structured high-level language. Additional knowledge of low level languages, man-machine interfaces and real-time communications procedures would be particularly well received.

Successful candidates will be secure in the knowledge of a high salary range and more senior people can now receive the rewards their experience deserves.

Why not call me, **GEOFF MARSH** on 01-499 4501 for more details and a confidential discussion.

Ref: RW 2/2

SOFTWARE ENGINEERS

to £8,000 + Relocation

One of the world's major manufacturers of Hardware Systems are seeking to augment their existing team of Software Engineers with both senior and junior programmers.

Working on the very latest Mini and Micro Hardware successful candidates can look forward to a rewarding career initially in one of these two areas:

★ Operating Systems ★

★ Data Communications ★

Both of these areas call for low level programming skills and individuals will be expected to demonstrate their ability in identifying problems and in proposing and executing their solution. Your future is secured with a manufacturer committed to staying at the forefront of technology.

Call me, **GEOFF MARSH**, on 01-499 4501

Ref: RW 2/4

PERMANENT ESSEX

Systems Analysts

c £6.5

Our Client, currently developing Real-Time MIS systems, is looking for good Analysts to help enhance their current developments using a cluster of Univac kit. Should you wish to enlarge your experience with on-line Real-Time experience, please do not hesitate to phone now!

IC419

Senior Analysts

c. £7k

A large manufacturing and wholesale Company is seeking persons with sound analysis experience to develop and enhance the business. Backed by a large IBM configuration, these opportunities provide you with an excellent chance of furthering your career immediately. For further details phone now!

IC419

Analyst/Programmers c. £6.5k

If you are seeking variety, a dynamic working environment, fast career progress and good technical training based on IBM mainframes this opportunity may be of interest to you. Our Client runs a Real-Time network located in a rural setting, where living costs are well below the average for the S.E. No matter what your programming or analytical experience a 'phone call could change your whole lifestyle — for the better!

IC419

Analyst/Programmers c. £5.5

If you are good at RPG2, are familiar with any machine in the IBM System 3 range and you have a flair for commercial analysis and design then do not hesitate to contact us now! Located in a very pleasant country village our Client offers a good career path and excellent opportunities.

IC419

Assembler Programmer c. £6.5k

This is an excellent opportunity for an ex-Systems Programmer, or a very competent assembler programmer to help develop an On-Line Real-Time system. The kit is IBM mainframe and the application will involve production control suites and some process control. Our Client is a large manufacturer and offers numerous company benefits. Please phone now for details.

IC419

Systems Programmer c. £7k

Our Client, a large multinational Company, operating an IBM 370 machine under OS-VS is looking for a really good 'practitioner'. If you are keen to learn, eager to progress and have the ability to really make things 'tick' then do not hesitate, phone now for a quick assessment of your chances.

IC419

Analyst Programmers c. £6k

If you have at least two years' experience in either Cobol, Assembler or PL1 and you wish to progress rapidly into either Analysis, Project Management or Software development then our Client would be very interested in talking to you now. Numerous large company benefits are offered with these interesting positions.

IC419

Programmers c. £4.5k

Our Client is currently running an ICL 1900 kit but is shortly to purchase powerful ICL 2900 series machines to increase business. So, if you have only 18 months' COBOL experience, preferably on ICL kit, and like working in excellent surroundings which will be supplemented by the usual perks one comes to expect from a leading Bank, then pick up the phone and find out more now!

IC419

Systems Designers c. £7k

If you call yourself a 'designer of systems' or if you would like to be known as one, then here is an excellent opportunity to do so now! Our Client is looking for persons with good analytical and design capability preferably on IBM kit to help them get a new development phase off the ground.

IC419

If you can't see anything here that suits you, still get in touch with us — We have many additional well paid vacancies in Essex and the City.

Telephone — John McLean for an up-to-date list of current opportunities on —

BRENTWOOD (0277) 212021

or write to him at:—
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P.O. Box 74, Brentwood, Essex CM15 0BZ
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JUNIOR OPERATORS...

**AN IBM INSTALLATION
WITH AN OUTSTANDING
FUTURE...**

The most common criticisms made by Operations staff are the lack of formal training and standards, ability to diversify their talents into other operational areas and a general lack of interest shown by management in their overall career prospects.

Can an installation provide the answers?

YES. Our client can provide an environment geared to success and places the utmost importance on developing the career prospects of their operational staff.

SIX MONTHS IBM/OS (any OS System) OPERATING EXPERIENCE IS THE QUALIFICATION NECESSARY FOR THESE VACANCIES.

Applications are based on 2 x IBM 370/148's with current operating systems under the control of OS/VS1 and VM 370. Extensive communications equipment includes local and remote VDU's, typewriter terminals, and RJE facilities spread throughout the U.K. It is a highly sophisticated operation and one that will rapidly improve in terms of hardware and operational technology. The department also offers opportunities to move into Production Support, Network Control and Commercial/Technical programming.

Starting salaries will be in the range £3500-£4300 plus shift allowance and currently a TWO SHIFT system is in operation. Other benefits include 4 week's holiday, Sports and Social Club, Staff restaurant and Shift dining facilities and an outstanding RELOCATION PACKAGE. The location is Dartford, Kent.

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SYSTEM /34 + HOLLAND

INTERESTED IN THE CHALLENGING DEVELOPMENT OF A USER-ORIENTATED ON-LINE SYSTEM /34 IN A VERY SCENIC PART OF HOLLAND?

READ ON:

We are an international trading company with complex and diverse interests whose administrative unit is situated in a pleasant wooded part of Holland.

Currently using an IBM System/34 we are engrossed developing an extremely complex data base type system to encompass all our activities including shipping, finance, administration, accounting, marketing, etc.

In order to maintain our development we are looking for a Programmer/Analyst who is an RPG II specialist with IBM System 32/34 experience. The job requires a self-starter with good initiative and an inventive mind, who can maintain existing programs and actively develop new sub-systems with the minimum of supervision.

Commensurate with the position a good salary plus attractive fringe benefits are offered to the right applicant.

INTERESTED?

Please write in complete confidence, giving full details of age, salary and career to date, to:

MIKE KEEN—EDP MANAGER
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MEERWIJKSELAAN 11
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HOLLAND

Computer Services Manager Cheltenham Spa from £7,000

Endsleigh Insurances, market leaders in the academic and professional sector, are embarking on a full in-house computerisation programme after 4 years with a service bureau.

To help us make the transition as smoothly as possible, we're looking for an analyst/programmer with a proven record of writing complex programs in RPGII in a GSD environment who, after initial liaison with our software consultants in developing systems for our on-line IBM System 34, will assume full responsibility for the setting up and running of our computer services department. The successful candidate will be well experienced in Project Work preferably as team leader and will play a vital role in our middle management structure.

We're a young company who pride ourselves on our progressive attitudes not only to our business but to our staff as well. Benefits include a salary sufficiently negotiable to be no bar to excellently qualified candidates, non-contributory pension, free life assurance, PPI, and relocation expenses where relevant.

And being a thoughtful company, we located our head-office in handsome, regency Cheltenham Spa which, with the Cotswold on the door-step is one of the ideal places to live, work and bring up a family.

Write, giving details of career to date to our Personnel Manager, Danny Mullen.

Endsleigh

Endsleigh Insurances (Brokers) Ltd.
Endsleigh House, Cheltenham Spa,
Gloucestershire GL50 3NR.
Tel: Cheltenham (0242) 36161.



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We require three consultants to join our already successful team of seven people. We plan to move to the West End in the first quarter of 1979, and at the same time we will open new offices in Manchester and Birmingham.

These three London-based positions will be of interest to people already connected with DP Sales or Recruitment Consultancy, who can prove an effective and above average track record in their current career.

Candidates should be aged 23 to 34.

CONTACT JACK COWDY OR BOBBIE McCORMICK
on 01-603 7335



Information Processing People

58 Pembroke Road, London W8. Telephone: 01-603 7335/6. Telex: 261298.
Computer Services & Recruitment Consultants.

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CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY BUSINESS SYSTEMS SOFTWARE PACKAGES



PROGS AND SENIOR PROGS

ICL Equipment — Cobol
KENT/SE LONDON area

£4500 to £6000

Our client provides professional share registration and membership services using advanced computer systems including a video terminal network. Due to further development work, more Programmers and Senior Programmers are urgently required to join their young, enthusiastic DP Department.

Applicants should have at least one year's experience using Cobol on commercial applications and preferably ICL equipment.

Excellent company benefits are offered including a minimum 4 weeks' holiday, free life assurance, and paid overtime. Relocation facilities are also available where appropriate.

Reference RJ 78612

SYSTEMS ANALYSTS

ESSEX

C £7000

Our client is a member of a multi-national group and need competent Systems Analysts to join their expanding DP Department. These positions offer the opportunity to increase knowledge of on-line communications, database and a wide range of applications from financial to technical.

Applications are invited from Systems Analysts with two years' experience who have implemented at least one system.

Excellent company benefits are offered including comprehensive relocation expenses and paid overtime facilities.

Reference PJ 78612

DOS/VIS SENIOR OPERATOR

CROYDON **£3762**

A senior Operator is required for a large company in the Croydon area using an IBM Mainframe working under DOS/VIS POWER/VIS. Two years' DOS/VIS experience would be ideal although people with less experience may be considered.

There are also excellent opportunities in due course for promotion to junior operations management or programming.

Reference PJ 78608

Further information and an application form contact the number below.

HEXAGON
computer services

145 WARDOUR STREET LONDON W1V 3TB

COBOL PROGRAMMER NORTH LONDON

£5,500

Our client is a major food manufacturer and is currently offering an opportunity for a Cobol Programmer to join a small and friendly team working on various commercial applications with a view to moving into analysis.

Two years' experience of Cobol is required and a knowledge of teleprocessing and Assembler would be an advantage although training will be given where necessary.

Excellent company benefits are offered including staff discounts and four weeks' holiday per annum.

Reference PJ 78610

TEL 01-439 3671

SENIOR SYSTEMS ANALYST

City of London



THE ORION BANK is a leading international investment bank, with six of the world's major banks as shareholders. Orion's assets exceed £1 billion and the profitability has increased impressively since its inception in 1970. Orion employs 280 staff in a modern, air conditioned building and is successfully involved in arranging financial packages through the Eurobond and syndicated loan market for an impressive list of corporate and private clients throughout the world.

COMPUTING AT ORION is successful; to maintain the growth in the bank's profitability, and retain the successful management style, fostered within a small highly professional staff, Orion has committed itself to comprehensive computerised systems. Consequently additional, high calibre, computer specialists who are keen to support a young, dynamic organisation in the implementation of the development plans are now to be recruited.

THE ORION PACKAGE

- Mortgage subsidised to 2½%
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- Relocation expenses where applicable

- Non-contributory pension scheme
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- Excellent working conditions
- Free banking facilities

ALL POSITIONS REQUIRE you to be presentable, hardworking, with a good standard of education and capable of fitting into a small but expanding department. Skills will include the vision to define original but practical systems, the ability to discuss business problems logically and intelligently with users and to work well in pressure situations. Further you must be self motivating, ready and able to accept responsibility and keen to advance your career.

Senior Systems Analyst**Package C, £10,000**

Reporting directly to the Systems Manager the Senior Analyst will lead a team of Analysts and Programmers and be responsible for the development of one of the scheduled systems using on-line and database techniques. Proven experience is required within the money market/foreign exchange environment and all project activities from feasibility study to implementation.

Systems Analysts **Package C, £9,000**

A Systems Analyst will report to a Senior Analyst and will be responsible for the analysis and detailed design of one of the four advanced systems scheduled for early development. All systems will utilise on-line and database techniques. Previous experience will include at least 2 years as an Analyst with systems design experience and a minimum of eighteen months programming experience. Ideally experience will include involvement in an on-line/real-time environment whilst applications knowledge gained in a merchant or investment bank would be preferable, but not essential.

Junior Analysts**Package C, £7,000**

Applicants will require a solid background in programming together with at least 1 year's systems experience gained in a well organised department. Qualities will be those mentioned above, coupled with the desire and the ability to progress quickly towards a full Systems Analyst role.

Capp Associates have been retained to recruit male or female applicants for these positions; for further details please telephone or write to our CROYDON office, quoting ref: CWIO5-9T or complete and return the coupon.



Please send me further details and an application form.

NAME _____
ADDRESS _____

HOME TELEPHONE NO. _____

BUSINESS TELEPHONE NUMBER (USED DISCREETLY) _____

REQUIRED POSITION _____

COMPUTER AND
PROFESSIONAL
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CONSULTANTS**CAPP ASSOCIATES**
LONDON AND MANCHESTER01-686 9693 (24 HOUR ANSAPHONE)
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Technical Support Unit**PROGRAMMER**

to support IDMS on ICL 2960s

The installation includes 2 ICL 2960s running under VME/B, supporting TP, MAC, distributed processing and IDMS database.

We now seek someone with experience of database implementation (not necessarily under IDMS) to join the Technical Support team. He/she will assist us in supporting IDMS users on BBC computers, by consultancy, project participation and training. Implementing, testing and maintenance of database software and development of new facilities.

The Technical Support Unit is located at the BBC Computer Centre in West London.

The salary will be in the range £5,200-£8,850 (currently under review).

Please apply for an application form enclosing addressed envelope and quoting reference number 1886/CW to Appointments Department, BBC, London W1 1AA, telephone number 01-580 4468 Ext. 4618.

**ANALYSTS/
PROGRAMMERS**

Consequent upon an expansion in our Systems and Computer Department we now have vacancies for experienced SYSTEMS ANALYSTS AND PROGRAMMERS.

We provide a range of support and advisory services to Group Companies using an ICL 1801-T machine. The main language in use is COBOL and we operate under a George II system.

Programmer
Applicants will be at least 'A' level standard and have 2-3 years' programming experience. A knowledge of COBOL will be an advantage as will experience of ICL machines, George II operating system and communications systems generally.

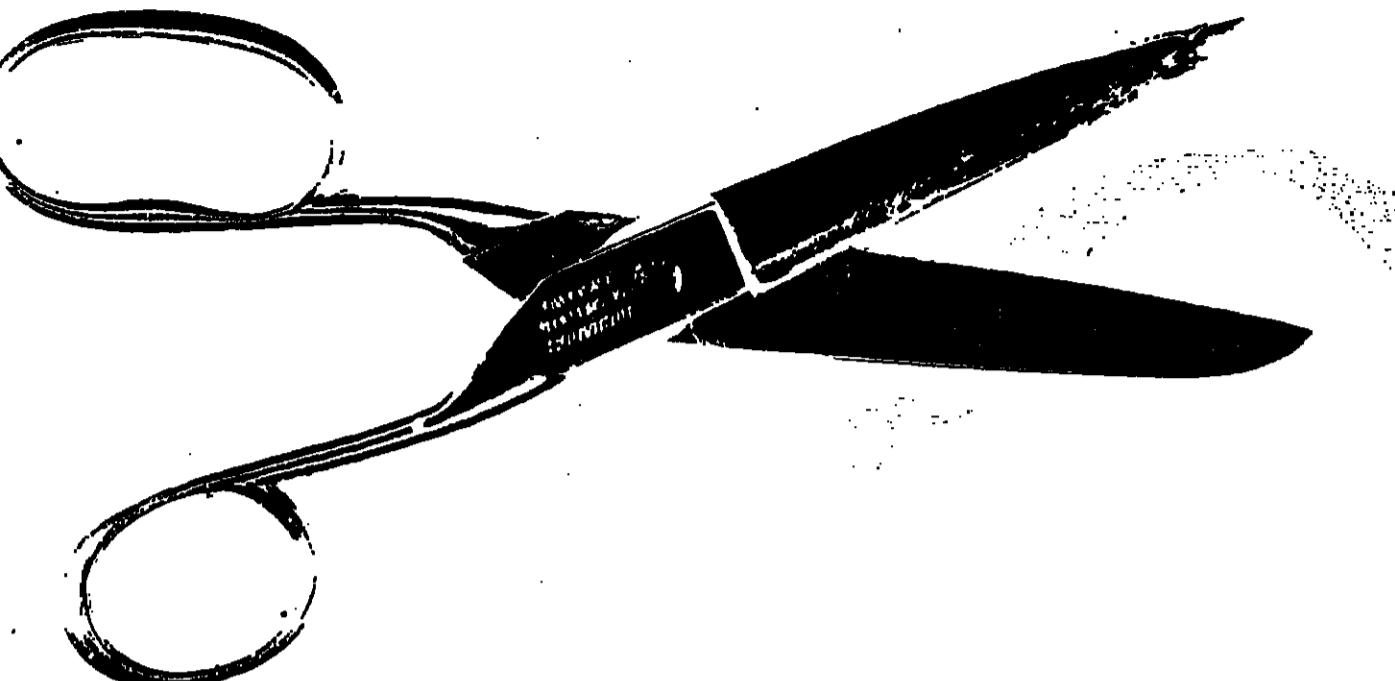
Systems Analyst
Applicants will have between 2 and 5 years' experience in systems design coupled with experience in another discipline such as accounting or production control. The ability to programme in COBOL will be an advantage as will a knowledge of communications systems in an ICL context. The requirements are such that it is unlikely anyone under 28 will have sufficient experience.

The successful candidate (male/female) will find the work challenging with demands being made upon both motivation and judgement.

The conditions of work are good and flexible working hours are in operation. If you live some distance from Coventry it may be possible to arrange interviews nearer your base.

Please write, under confidential cover, quoting sufficient detail age, experience, qualifications and salary to render unnecessary the initial completion of an Application Form.

The Personnel Executive,
Wickman Machine Tool Manufacturing Co. Ltd.
Banner Lane, Tile Hill, Coventry CV4 9GE

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Not satisfied with the phenomenal success of their latest products, our Client has set up a WHOLE NEW DEPARTMENT to capitalise on that success, with YET MORE EXCITING DEVELOPMENTS in HARDWARE & SOFTWARE. This department needs a FURTHER 12 PEOPLE IMMEDIATELY.

System Programmers & Microcoders (Berks) Circa 5-8K

Programmers with 2 years + experience of ASSEMBLER LEVEL languages and/or Operating System Development who wish to rapidly expand their experience of Systems Software; or Engineers wishing to branch into Systems Software.

For further details of these exciting opportunities CONTACT MARILYN DAVIDSON.

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Candidates with 2 years ECL, Logic and Circuit Design experience who are familiar with Micro Processor Techniques, to work on Small System Developments.

For further information CONTACT MARILYN DAVIDSON.

Suite 74-76, 12/13 Henrietta Street,
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01-240 3223



Job ref 120

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High intelligence is a fundamental prerequisite and a degree in a scientific or social subject or education would be a significant advantage. The wide range of opportunities presented by this unique position can only be fully explored by a person with a creative and flexible mind, a thoroughly results orientated approach to business, the personal stature to negotiate at the highest level and clear potential for rapid advancement into management.

The job will be based in CENTRAL LONDON and annual on-target earnings will be in excess of —

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Please supply complete career details and quote reference CDP019 when applying.

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Magazine Media Management Division

Contract Requirements

ICL 2900 VME/B COBOL
Vacancies in UK/EUROPE
starting in early 1979 long and short
term requirements for programmers,
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Call Richard or Suzy on 01-491 4706
Software Division
Staff Services Division of BOC Data Processing and
a member of Computer Services Association

UNIVERSITY OF HONG KONG CHAIR OF COMPUTER SCIENCE

Applications are invited from suitably qualified candidates for the Chair of Computer Science which is expected to be appointed from 1 September 1979. Annual salary (negotiable) will be within the professional range not less than HK\$140,820 (£1 - HK\$1.40). Further particulars and application form may be obtained from the Secretary General, Association of Commonwealth Universities (Appas), 38 Bedford Square, London WC1H 0PF, or the Academic Staff Secretary (Recruitment), University of Hong Kong, Hong Kong. Closing date for applications is 31 January, 1979.

Systems Analysts

Peterborough

Total Remuneration up to £7,200

British Sugar is an expanding Company. Already 'Silver Spoon' sugar is the leading retail brand in the United Kingdom. With a current turnover of more than £300M and an expansion programme of £150M the Company is moving towards supplying half the country's needs for sugar.

To meet these changing requirements of the business and in order to utilise new technological advances we need to strengthen the Computer Services Department. This Department provides a central computing function to seventeen sites across the country. We now use VDU systems which are being expanded to cover all locations.

Our requirement is for Analysts with practical experience in system design and implementation. We are looking for people who have worked with user departments in order to define their requirements and we expect a good educational background.

We pay competitive salaries and believe that we can provide a progressive and challenging environment in which to work.

If you think you meet our requirements please write, enclosing a full CV, to: R. J. Bess, Personnel Services & Staff Development Manager, British Sugar Corporation Ltd., P.O. Box 26, Oundle Road, Peterborough.

British Sugar

SALES EXECUTIVE (SOFTWARE PACKAGES)

SALES TERRITORY WEST LONDON AND WESTERN HOME COUNTIES

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P.A. PLUS COMMISSION —
PLUS HIGH QUALITY CAR

This is an exciting opportunity to join a privately owned highly successful, well-respected Software Services Organisation, whose commitment to commercial package technology has ensured their success both within the United Kingdom and Internationally.

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- * a broad knowledge of commercial systems
- * a proven sales ability coupled with a high level of self motivation
- * a preparedness to fit into the smaller company environment

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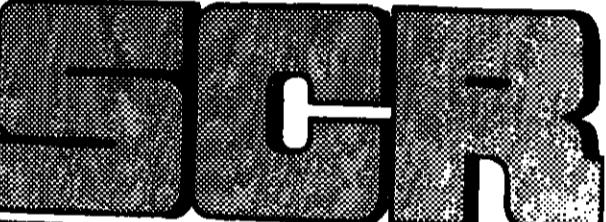
- * realistic and achievable quotas
- * genuine long term career prospects
- * full technical support and back-up facilities.

Join this influential Group of Professionals, active in the most buoyant sectors of the software industry.

Non-contributory pension, free BUPA and many other benefits apply to the above position.

**CONTACT: RICHARD CHAMPION, ADVISING CONSULTANT
ON: 021-236 3781 (24-HOUR ANSWERING SERVICE)**

SPECIALIST COMPUTER RECRUITMENT LIMITED



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LONDON 01-933 0671

Freepost, 13, Mandeville Place,
Wigmore Street, London W1M 6LB



Computing
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...when you see the minor miracles we perform with time-critical software. No integrity demands are too high, no response time too short to get the better of us. And when you're engineering software for airborne applications, that's the way it has to be.

To outsiders, the men and women we call software engineers look like any other programmers with real-time experience in non-commercial applications. But we know they're special. And so do they.

For more information about a software career that can leave your feet just a few inches above the ground, phone Norma Coulter on 01-953 2030, ext. 3771.

Alternatively write to H. E. Batcheler, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. Please quote reference MA79006

MARCONI
AVIONICS
A GEC Marconi Electronics Company

Business Systems Manager

East Midlands Based
c. £8500+car

Our client, a major British group in printing, packaging and publishing, has embarked on a long-term plan to investigate, develop and implement new manual and computer systems for all users in the organisation. Computer systems will be developed for the central mainframe or distributed equipment as appropriate.

The successful candidate will be responsible for the investigation of business requirements and the subsequent specification and implementation of commercial and financial systems, in conjunction with the Computer Services Manager where computer solutions are appropriate. The Business Systems Manager, who will report directly to the Group Finance Director, will control a small multi-disciplined team of Business Systems Analysts.

Our client invites applications from systems professionals with around 8 years experience in systems development, project scheduling and control at a supervisory level. The person likely to meet the requirements will be more interested in getting involved in the practical solution of business management problems than in the technical aspects of DP.

An excellent starting salary around £8500 will be offered to the successful candidate, together with a company car and significant benefits package. Relocation expenses will be available as appropriate.

Please phone for Personal History form, or write enclosing CV to Tony Pastrana, quoting reference number N58. Applications are invited from either sex.

BIS Applied Systems Limited
Quay House, Quay Street
Manchester M3 3JH
Telephone 061-831 7031

BIS Applied Systems

Data Processing Challenge

South Wales

Zimmer Orthopaedic Ltd. are market leaders in the manufacture of Fracture Equipment, Wheelchairs and Rehabilitation Equipment. They have two excellent opportunities on their Data Processing Department where you will be an integral part of their professional management team.

Data Processing Manager

£5500 (Negotiable)

Responsible to the Data Processing Administrator liaising on the day to day running of the department, duties include data control, management of 9 staff and equipment and maintaining the existing on-line RSTS/E operating system using Basic + programming.

Ideally aged 25-45 years with good practical experience in commercial systems and with a PDP 11/40 computer. Knowledge of the RSTS/E operating system and programming language Basic + is required.

Analyst Programmer

C £5000

Directly responsible to the Data Processing Manager with whom close liaison is kept on the running of the department of 8 staff and taking over in his absence. Duties include the programming of the Digital PDP 11/40.

Ideally aged 25-45 years with experience in the use of a PDP 11/40 and commercial systems. Knowledge of the RSTS operating system is essential with knowledge of language Basic + being an asset.

These positions are located in an attractive area of South Wales. They offer an excellent starting salary plus a productivity bonus and benefits of working for an expanding internationally respected company. Relocation assistance is available.

Talk to Mel Davies, or Pamela David on Swansea 43461, or write to:

PER
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Applications from both men and women are welcome.

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We need pioneers in Systems Analysis to plan and influence the growth of this system from Hewlett Packard minicomputers through to massive Mainframe configurations; to create a highly-sophisticated Management Information System for the construction of the project and, ultimately, similar systems covering transport, amenities, payroll, finance and utilities within the City. We're looking for articulate and technically-competent professionals able to convey ideas in lay terms, who have front-end experience, preferably overseas.

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If you'd like to know more about this challenging project and to have the opportunity of discussing just what we can offer you in return for your abilities, write or telephone Saudi Arabian Parsons Limited, c/o John Hooley, The Ralph M Parsons Company Ltd., Radley House, 39 South Ealing Road, London W5. Telephone: 01-579 3131.

Closing date Monday 15 January 1979.

Application Form and further particulars may be obtained from the Personnel Department, Regional Headquarters, Saudi Arabian Parsons Ltd., P.O. Box 118, Doha, Qatar.

JOHN HOOLEY, RADLEY HOUSE, 39 SOUTH EALING ROAD, LONDON W5.

Telephone: 01-579 3131.

Telex: 822000.

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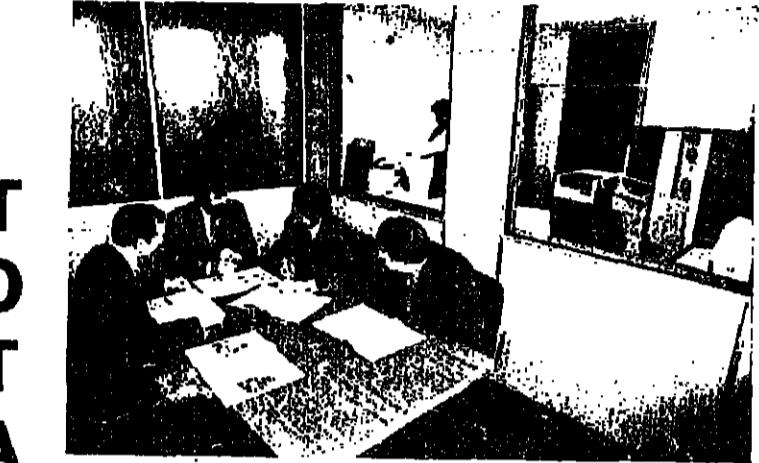
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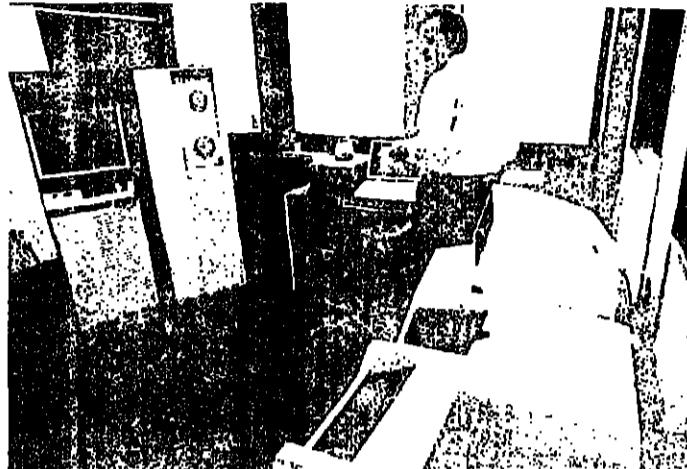
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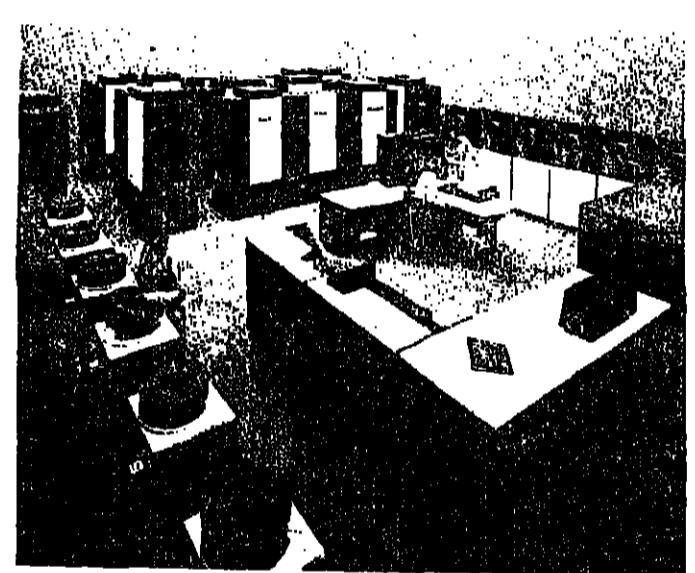


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A major electronics manufacturer has urgent needs for experienced DEC Programmers to work on minicomputer systems for industrial and defence projects. Experience sought includes RSX-11 or RT-11 with preferably MACRO-11 also. All candidates must have used PDP 11 equipment in a technical or scientific environment.
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DORSET
Software Engineers and Analyst / Programmers are required by a large national electronics group to work at their Dorset factory on Traffic Control Systems. All candidates must have PDP 11 experience using CORAL or Assembler. Ideally some message switching experience will also have been gained.
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WILTSHIRE. TO £6,500
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Candidates seeking project leader opportunities are sought in the Newcastle under Lyme region by an engineering subsidiary of a major national group. The company use an online terminal facility to a group mainframe, and provide MIS to manufacturing and administrative management. All candidates should have at least 3 years' systems experience in an engineering environment.
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Telephone 021-454 7908

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The rapidly growing Kuwait consultancy has immediate requirements of experienced DP staff ready to assist with installation development both within the industrial and Commercial sectors, and within the Public sector in various Ministries. Staff are urgently required at all levels from Operations Supervisor to Programmer Analysts, Systems Designers, Analysts, Programmers, Testers, Supervisors, etc. Some self employment packages exist with furnished accommodation provided. Numerous new candidates are urgently required for London and Midlands interviews during the next week. Complete the attached form without delay. Applicants must not have more than two children. Preference will be for candidates with no children.

Consultant — John Wood

PROJECT MANAGERS, ANALYSTS AND PROGRAMMERS
Birmingham Data Centre 4K to 7½K

EMS urgently need over twenty more staff to support the Turnkey Systems Division. Staff are working on a wide range of development projects for both first time and network users. Ability to programme in Cobol and work as a small team member, committed to tight deadlines, will be important. In house machines include Honeywell Level 6, and ICL 2904's. Experience of Cobol on any machine will be acceptable as re-training will be given. Applications include Ledger, Stock Control, Financial Planning, Payroll, etc. Modular programming is currently used in an online environment. All programmers have immediate training access for development and testing. Occasional travel to client sites for testing and installation will be involved. Overtime working to help with tight deadlines will be essential. All Analysts must have had previous programming experience and be prepared to assist in frequent on-going software pack programmer loading occurs. Analysts will also be given Business Analyst opportunities to undertake feasibility studies and make client presentations assisting the Marketing team. The installation is ultra modern and attractively furnished. Excellent career opportunities are available for all levels of motivated staff, keen to make a personal contribution to our outstanding growth record. Either attend our interviews directly as advertised, or return your career form today and telephone us for an early meeting. Don't miss this outstanding opportunity of working on 1980's applications now.

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£14K to £8,500

EMS are due to open Honeywell sales consultancy within the UK, have a substantial quantity of recruitment assignments throughout the UK for Analysts and Programmers to assist with new developments. Honeywell houses are currently experiencing a high demand sales boom, resulting in an urgent need for additional staff prepared to work both experienced staff and IBM, ICL prepared to retrain on the equipment, to assist hundreds of new users' requirements. We offer the best jobs at Honeywell installations, irrespective of your UK location. If you want the best jobs at Honeywell installations, you're in the right place, all on our computers waiting for you.

Consultant — Don Philip; John Wood

COBOL, ASSEMBLER PROGRAMMERS —
LONDON, MIDLANDS, NORTH 4K to 6K

We urgently require a team of 2,000 experienced Programmers to help 100 clients requiring systems throughout every major town and city within the UK. Clients include Banks, Building Contractors, Manufacturing, Consultancies, Distributors, Engineers, etc. All Programmers irrespective of background, experience and age, will be offered a career opportunity, should apply urgently to EMS via the telephone 021-454 7908. In the event of their choice by every local employer able to offer the job instant and long term. Hardware includes IBM, Honeywell, ICL, NCR through to minis. Let EMS develop your career for you. Join thousands of other satisfied candidates.

Consultants — Carol Proudfit, Selina Mills, Don Philip

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HERTS, Up to £7,200

One of Britain's largest trading groups has a large quantity of outstanding projects. Analysts vacancies to cope with substantial expansion plans being developed. The client requires candidates to have an IBM background preferably with some mainframe experience. In addition any IMS or COMMS knowledge would be especially valuable. Existing analysts are available with interesting and absorbing projects and good career development opportunities, future applications and a wide range of interesting new products. Relocation assistance will be provided where appropriate.

Consultant: John Wood (Newcastle Office)

ANALYSTS
£6,000-£8,000 Packages

Staff are urgently required to support growing client consulting commitments throughout the region and to work on a wide variety of development and maintenance projects. Applications include Ledgers, Stock Control, Distribution Systems, Financial Planning through to Payroll. Candidates should possess a minimum 3 years systems experience and be capable of working in a team environment both within very large and small installations. Opportunities exist to gain experience of major merchandising systems and futuristic hardware. So, with at least 3 years' systems experience, if you are interested in earning an attractive salary and expenses package, complete the attached career form today and return it to EMS without delay.

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PROGRAMMERS
HERTS, Up to £6,400

Britain's first IBM Series 30 *situ* have a large number of outstanding vacancies on numerous interesting new development projects. Experienced IBM Programmers are urgently sought to work on large project teams. Any IMS, TSO experience would be especially valuable. Otherwise, general OS/COBOL will be acceptable. Relocation assistance provided.

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Analysts — City

Analysts — Acton, Urgent

IBM — Analysts, Herts

IBM Progs — 750, Herts

ICL Cobol, Herts

Fortran, Various

Cobol Progs, Norwich

PPDP & 11 Programmer, London, Urgent

POP & Intel, Herts

Hawthorn Packard, Surrey

IBM OS/MCS Cobol/Assembler, Brighton

ICL Analysis & Progs, London

And many others weekly

MIDLANDS
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IBM Cobol

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PPDP Assembler

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Honeywell Analysts, N.W.

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Honeywell Cobol/IDS/TDS, N.W.

Honeywell, Cobol, Yorks and Teesside

Honeywell IDS Cobol Programmer, Hull

ICL Cobol Progs, Various

IBM Cobol, Various

Fortran and Assembler, North West

IBM Cobol DL/1, Doncaster, Urgent

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Fortran — Univac

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John Wood

Don Walklate

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Our clients the leading Kuwait consultancy, have an increasing annual requirement for a range of experienced DP staff at all levels. Hardware includes IBM, NCR, ICL and CMC, with Texas Instruments just starting to develop a base in the region. Candidates successfully recruited, Analysts, Systems Designers, Analysts, Programmers and Ops Supervisors teaching operations to Arab nationals. Users include Ministries, Oil Companies, Trading Companies, Bell Turnkey Systems companies, Petro-chemical Industries, Airlines and Government. All candidates seeking interesting work with tax free salaries should apply to us immediately. Preference as usual is strictly for single people, or married couples with no children.

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Reason for Seeking Change
Details of type of position wanted
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Please explain below, in an 8-10 line précis, your current duties and applications experience

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Spoken Written Read

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ICL 2900/2970	MVT/MFT	ASSEMBLER	CICS
ICL 2903	GEORGE I	PLAN	IMS
UNIVAC 1100	GEORGE 2	PLI	BOMP
UNIVAC 1100	GEORGE 3	IPG 2	DBOMP
BURROUGHS 7000/8000	MCP	USERCODE	PERT
BURROUGHS other	EXEC 8	AUTOCODE	VSAM
HONEYWELL 66	GCOS	EASYCODER	IDS/TOS
HONEYWELL 32K	OS 2000/200	ALGOL	MICROFILMING
HONEYWELL other	VME16/VMEK	NEAT	TELLIPROCESSING
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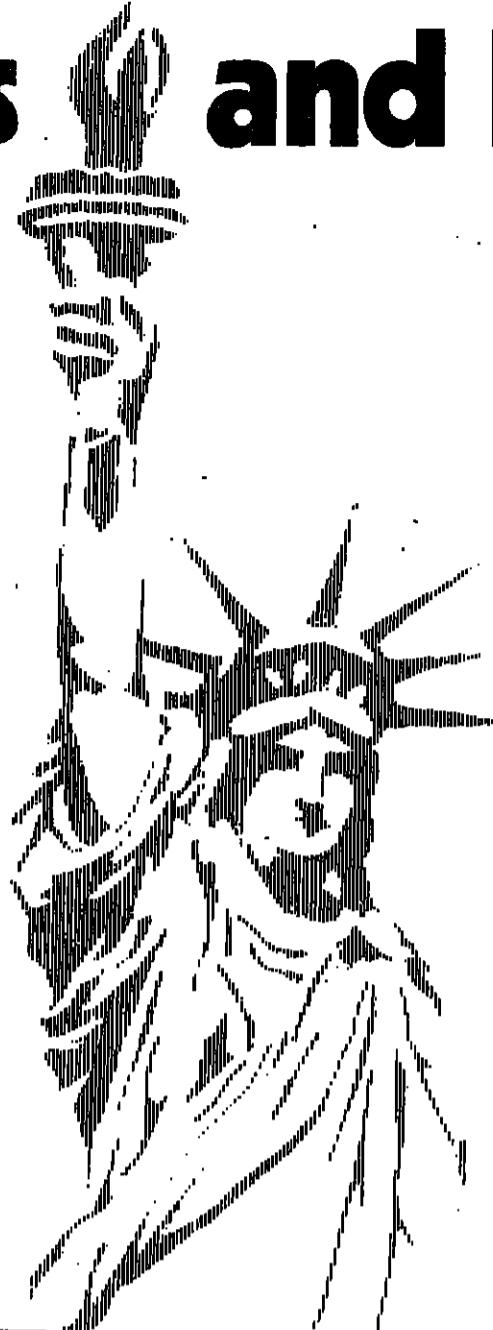
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LOCATION: Brighton

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We are looking for someone within an age bracket of 30-40, who has had experience of working in a large user environment or a computer consultancy, where his or her responsibility will have covered some of the things mentioned in the previous paragraph.

Currently, American Express are establishing a department which will be responsible for all systems planning, and one of the major responsibilities will be to develop this department and

ensure that the proper service is provided to the Systems Development Group and the Operations Group, as well as the users of Computer Services.

The successful candidate will be aware of the impact new hardware and software can make on business decisions, and will have the ability to harness hardware and software to both long and short range and business planning.

The business opportunity is exceptional. This position is seen as one of the most important appointments within the computer group. If you feel you have the kind of experience indicated by the job title and the description given, please send a comprehensive curriculum vitae to John Goldsmith, with a contactable telephone number.

Ref: 2168/C



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Hardware lecturers should have good in-depth electronic backgrounds with suitable qualifications and actual computer hardware experience would be particularly useful. Software lecturers should have good backgrounds in commercial languages and operating systems.

The positions in North Cheshire will be based initially in West London (probably for about 6-8 months) and during this time, accommodation allowances will be negotiated on a five-day week basis.

Interested candidates should telephone BOB BOWER the Advising Director, to arrange an interview.

Reference CW/210/1

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To take responsibility for the marketing of a specific product. The job includes pricing, stocking, configuring, creation of literature and sales aids, training, liaison with the Company's European Headquarters, support at large sales negotiations, presentations, analysis of competition and general support at a senior level.

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To control specific applications areas relating to Trade and Industry and in particular such areas as depot accounting and other distributed data processing applications.

The job involves researching specific applications areas, helping to create packages, planning sales campaigns, training, running sales workshops together with product specialists, supporting large sales negotiations, and generally offering troubleshooting and support back-up at a senior level. Applicants to the job will clearly identify closely with this specification and have the necessary experience upon which to draw.

Applicants to both positions could come from a variety of backgrounds such as sales, marketing, support, software house, large commercial T.P. user etc. Preferred but not essential is an age group of between 28 and 35 and an education to Degree or equivalent.

These are two first class opportunities and interested applicants should contact BOB BOWER Advising Director to arrange an early interview.

Reference CW/210/2

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Good communication skills and a willingness to travel are required together with two years COBOL experience and experience in analysing and installing either ledger or payroll systems.

For further information, please contact MARK IRENS.

Reference CW/219/3

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You should know exactly what the opportunities are at the moment and we should certainly know if your success and ambition could lead to a better job, either now or later.

Make certain that we know about you by contacting Mark Irens to arrange a meeting anytime between 8 a.m. and 6 p.m.

Reference CW/219/4

HUTTON EXECUTIVE SELECTION LTD.
HUTTON HOUSE,
HUTTON STREET, LONDON EC4Y 8HP.

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SYSTEMS ANALYSTS

South Yorkshire/Sheffield
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Excellent career development opportunities for young Systems Analysts with our clients in South Yorkshire/Sheffield.

Applicants should have:

- * Good education
- * 3 years DP - including 1 year systems analysis

Our clients offer:

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Contact Ivor Norton quoting reference CW/79004

Ivor Norton Management Services Ltd
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Harrogate HG1 1TS. Tel: Harrogate 66628

Opportunities for Programmers in computer aided design

Software Sciences Engineering is a specialist subsidiary within the UK's largest computing services organisation. Based in Rugby, the company provides a computer-aided design and drafting service to engineering industry throughout the UK. Customer demand has created a number of career openings for experienced programmers seeking challenge and variety in their work.

We are looking for candidates, educated to degree level, with practical experience in:

Engineering — there are two opportunities for people with an engineering background plus FORTRAN programming experience. Knowledge of draughting, component design, or finite element analysis would be an advantage.

Mathematical computing — we also have an opening for a specialist with FORTRAN and machine code experience (Pyrne 300 or other mini).

Successful candidates will be working in areas where they will have the satisfaction of seeing immediate benefits from the practical application of their skills. In particular their work will include:

— contributing to the further development of our SWIFT computer-aided design/draughting system;

— writing special-purpose facilities into SWIFT in response to individual customer requirements;

— developing specific new programs for our clients in all areas of computer aided design and manufacture and engineering graphics.

At Software Sciences Engineering you will be getting the best of both worlds — the chance to make your mark in a small company where each individual really counts plus the benefits, prospects, and stability offered by a major computing group whose success depends on its understanding of the needs and ambitions of its professional staff.

If you are interested in this vacancy, please contact Maureen Smith at Software Sciences Engineering, by letter or telephone, for an application form.

Based at Rugby
£4500 to
£6000



Software Sciences Engineering Limited
54 Newgate, Rainley Terrace, Rugby, Warwickshire CV2 3HT
Tel: 0527 51117

Software Sciences Engineering Limited
54 Newgate, Rainley Terrace, Rugby, Warwickshire CV2 3HT
Tel: 0527 51117

At Honeywell we really appreciate SALES EXECUTIVES...

...in every sense
of the word!

There is much more to a selling job with Honeywell than just the prestige of working with one of the top names in the computer industry. In every way our sales executives are highly valued employees. We pay them well, we train them thoroughly, we support them with enthusiastic and highly competent pre and post sales support technicians, we provide them with real scope for creative selling and above all, we ask them to sell a range of computers which is at the forefront of technology and performance.

Levels 62 and 64

All over the United Kingdom our business is expanding rapidly, with particular success in

East Anglia

where our growth has created the need for further SALES EXECUTIVES based at our CULCHESTER offices. This operation is well supported with demonstration facilities, highly qualified support personnel and a wide range of existing clients.

We generally expect our sales executives to earn between £11,000 and £14,000 per annum

as well as providing them with a company car and a variety of fringe benefits, but of course this income range excludes our 'high-fliers'.

If you are already a successful sales executive with over 2 years direct experience of selling commercial applications systems and feel that your career path is in need of enhancement, we'd like to meet you — wherever you are!

Please quote reference HEA 019 to:
SMR Sales & Marketing Recruiters Ltd., Victory House,
99 Regent Street, London W1R 7HB. Telephone: 01 734 9776.

SENIOR CONSULTANT

Aslib has provided a specialist consultancy service in the field of information management for over ten years. Our clients have included industrial and commercial companies, professional institutions, government departments and international organisations. Our work is varied and involves:

- designing and setting up new information systems or libraries of various kinds;
- reviewing and evaluating existing services and advising on their future development;
- advising on the use of specific techniques (including computer techniques) for information handling or library processing;
- undertaking contract research.

We are now seeking a SENIOR CONSULTANT to join our Research and Consultancy Division. The essential requirements for the post are:

- a keen interest in the solution of complex, and often novel, problems in the information field;
- objectivity in gathering and analysing the data on which decisions can be based;
- ability to communicate the results and conclusions of an investigation to the client organisation.

The kind of person we are hoping to recruit could be a practising information scientist with a flair for systems design, or a specialist from the field of computer science with an interest in information problems. Our offices are in London, and the work entails a certain amount of travelling. The preferred age group would be 28-40, and a degree and/or professional qualification would be required. The position is in a grade with a salary ranging upwards from £6,000.

Application forms are available from Pat Gros at Aslib, 36 Bedford Row, London WC1R 4JH. Tel: 01-242 4282.

Aslib

Data Base Administration

As an International Marketing Research Company and a leader in the business information service, we require someone with a good background in Commercial Systems to introduce Data Base to the United Kingdom.

Our Head Office is located in a rural setting on the outskirts of Oxford. The installation comprises an IBM 370-145 running under OS/VS1 and a DEC PDP 11/34 running under RS/VS/E.

If you have a good knowledge of one or more DB/DC System for IBM hardware and a couple of years' experience in designing and implementing DB/DC Systems, we'd like to hear from you.

In return, we can offer you a challenging and rewarding job, there'll be some travelling to London, and a starting salary up to £7,000 and an annual bonus and results-oriented management approach. Full re-location expenses will be met where appropriate.

For an application form, please telephone or write to: Mrs. Carol Nayns, Personnel Services Manager, A.C. Nielsen Company Limited, Nielsen House, Headington, Oxford, Tel: 0865 64851, Ext. 202.

INITIATIVES

Renowned and financially independent European
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MYRIAD OPERATIONS
Computer Personnel Consultants

OPERATIONS SUPERVISOR

BASILDON

We are seeking a self-motivated person to take control of a new IBM installation. Our client is to install the new 8140 distributed processor at their computer department in Basildon.

The person appointed will be responsible for the management of the established operations area and could expect to gain promotion to Operations Manager in the near future.

Applications are invited from Senior Operators, preferably with an IBM 370 background and knowledge of OS/JCL.

The position offers both the opportunity to gain management experience and the potential to progress to total control of the operations area.

Ref. SE/2/1101

24-hour answering service

Please telephone for a confidential discussion or write
30 Fleet Street, London EC4Y 1AA
01-353 0981

KUWAIT — TAX FREE APPOINTMENTS

SYSTEMS ANALYST — £14000) PLUS PROGRAMMERS — £13000) BENEFITS

THE COMPANY

We are a major trading group in Kuwait with diverse interests in automotive sales, domestic appliance retailing and contract engineering.

THE INSTALLATION

We have been using computers to help run our company since the early 70's. Our present computer is a NCR Century 201 operating under 'B3' running a mix of online and batch systems. Later this year we plan to upgrade to a NCR Criterion 8550 using VRX and the TOTAL database management system. We intend to develop several new online systems and require additional analysts and programmers to help us do so.

THE ANALYSTS

The people we are looking for will be able to demonstrate the following:
* At least 3 years' experience as a Systems Analyst
* Significant experience in the Purchase of Retail Finance applications
* Experience of On-Line systems design
* Responsibility for the design and implementation of at least one major system.
In addition they must be self-motivated, innovative and capable of acting as an in-house consultant to the user department.

THE PROGRAMMERS

Applicants for the programming position will ideally have the following experience:
* At least two years' programming experience using NEAT/3 and COBOL
* Working knowledge of NCR Century operating systems
* Experience of structured and modular program design
* Supervisory experience.

* Applicants with previous NCR online programming experience are especially welcome

THE BENEFITS

Our contracts are of 2 years' duration and are renewable. The emoluments quoted above which include salary and housing subsidy are tax-free and permit the accumulation of substantial exportable savings. Additional benefits include a Company air-conditioned car, interest-free furniture loans, and paid leave equivalent to 60 days per contract.

THE APPLICATIONS

Interested persons should send an updated C.V. to MRS SUSAN HOLLEY, 6th FLOOR, SILVER CITY HOUSE, 82 BROMPTON ROAD, LONDON SW3 1BW, quoting reference R2406. All applications will be acknowledged and forwarded to our EDP Manager in Kuwait for selection of candidates for interviews in London.

monklands
district council

AA Hintons

ARE YOU AN EXPERIENCED PROGRAMMER — IS IT TIME YOU CHANGED YOUR JOB?

Why not contact us for an interview?

We have recently up-dated our computer and are about to do again. We are now embarking on an interesting new major development including on-line systems. We require additional Programmers to supplement our present development team.

We are looking for capable Programmers with two years' COBOL experience and the ability to work to a restricted schedule. Experience of programming for a multi-programming machine is not essential but would be a distinct advantage.

We can offer suitable applicants interesting work in our modern offices where career facilities are available on the premises.

An attractive salary will be paid to the successful applicants and bonus schemes are in operation.

Written applications in the first instance, please giving details of employment to date and where available for personal interview at Head Office, Thornton, Tel: 01-924 2422.

J. B. NESS
Chief Executive
AMOS HINTON & SONS LTD.
P.O. Box 24, Maltby Road, Thornton, Cleveland
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Racal-Milgo Limited is already the leading Data Communications Company and is planning the fastest growth in business in its history. The market is huge, the products are without equal and the rewards are high.

Ambitious people (male & female) are now sought to join the successful UK Division in the following capacities:

Area Sales Engineers

To sell our comprehensive range of data communications equipment to computer based users, within defined territories.

Applicants should have either selling experience in the communications, computer fields, or engineering backgrounds and strong desire to break into the commercial world. All necessary training will be given. These positions will be based at our Reading, Manchester or Birmingham offices, and will command attractive base salaries, generous commission and a Company car.

Internal Sales Engineers

To co-ordinate the activities of the Field Sales Team and to actively support projects in the pre-sale stage. This involves extensive customer contact and liaison with all Company departments.

Applicants should have an electronic technical bias and a good telephone manner, possibly gained in a commercial environment.

These internal positions (in Reading or Manchester) can lead to Field Sales appointments.

In addition to competitive salaries, the Company offers over four weeks annual leave, a first class contributory pension scheme with free life assurance and relocation assistance where appropriate.

Ring for an application form, or write with personal and career details to:

D. J. Kitchenside, Personnel Officer, Racal-Milgo Limited, Prospect House, Thorn Street, Reading, Berkshire Telephone: Reading 595314

The Sales Challenge of 1979

Data Communications

RACAL

SERVELEC ANALYST/PROGRAMMERS TO £5,500 + BONUS

We are a young, expanding Computer systems house with a solid client base involved in micro/minicomputer based automation/control systems.

We are establishing project teams and require analyst/programmers with the following qualifications:

- + 1-3 years programming experience, including assembler language
- + Problem solving capability
- + Professional outlook and ability to communicate

We offer rapid career development with regular salary reviews, staff pension and insurance schemes, together with all the usual company benefits.

CALL OR WRITE TODAY: John Asher SERVELEC COMPUTER SYSTEMS LTD., Church House, Talbot Road, Old Woking, Surrey GU1 4PD. Telephone 081 572 0559 or Woking 631498 (evenings).

DATAFORCE

PERSONNEL & COMPUTER CONSULTANTS AUSTRALIA

SYSTEMS ANALYSTS-SYSTEMS PROGRAMMERS-PROGRAMMERS
Data processing in Australia is currently at a peak and rewards are high. If you are interested in employment prospects in Melbourne and Victoria, Dataforce wants to talk to you. One of our Directors will soon be conducting interviews at Victoria House, London, and at Birmingham and Bristol. Call one of the numbers below to arrange a time when we can discuss your requirements and indicate likely prospects and salaries. Feel free to involve other members of your family in these sessions. Information will be made available on the cost of living in Australia and every attempt will be made to answer your questions.

UNIQUE SCHEME:—as well as finding your employment, Dataforce offers participation in a unique scheme whereby if, after 90 days, you are in the same employment that we arranged, you will receive a bonus equivalent to 2% of your annual starting salary. This bonus is independent of your new employer.

Telephone: 0825-403081 London, 0213-511404 Birmingham, 0225-22368 Bristol, Dataforce Pty. Ltd., 101 Toorak Rd, South Yarra, Vic, 3141 Aust. Phone 267 5677

UNIVERSITY OF SURREY COMPUTING UNIT

ANALYST / PROGRAMMER

Salary scale to £6555 per annum (under review)

The Data Processing section of the University's Computing Unit has a vacancy for an Analyst / Programmer to be responsible for all computer systems required by the Library and Bookshop. Duties include systems analysis, specification, design, programming, testing, documentation and implementation. First priorities will be the development of a completely new system to control the ordering of books, and the provision of online functions for book borrowing and reservation.

Some successful system design work, and at least two years' programming experience (COBOL or similar) are essential requirements; but experience in particular applications, or with particular computers, is less important than the personal qualities of adaptability, self-motivation and an ability to communicate.

For further details, or to arrange an informal interview, please telephone Mr. A. Hill on Guildford 71281, Ext. 730.

Applications in writing, including the names and addresses of two referees, should be addressed to the Staff Officer, University of Surrey, Guildford, Surrey GU2 5HX.

Project Leader

Salary scale £7,466-£7,979 per annum

Required for our offices in E.C. 1.

The successful candidate will manage a team of system analysts and programmers in the day-to-day maintenance and production of new suites of programs. Four years' experience of programming and systems analysis, two in a senior role, are a minimum requirement. Knowledge of Informatics MARK IV, COBOL or APL would be an advantage but more weight will be given to evidence of leadership and organisational ability.

We operate two IBM 370/148 computers connected to a large teleprocessing network. Interesting developments in this network are in hand involving the evaluation of IBM Series 1 and similar equipment. The software environment is DOS/VMS under VM, utilising CMS for on-line program development. Batch work is handled by Informatics MARK IV.

Generous holidays — Staff restaurant — Flexitime. If interested, why not ring Mike O'Meara on 01-377 3300, Ext. 2331/1330 for further information and an application form, or simply send concise details of your qualifications and career to date, and quoting reference CW to: Laurence O. Wild, CEng, FIMechE, FIVES, Divisional Manager, Room 850, Thames Water Authority, Metropolitan Water Division, 173 Rosebery Avenue, London EC1R 4TF.

The post is open to male and female applicants. For further details and an application form, please contact Brian Murray, Personnel Manager, Corning Medical, Corning Limited, Northern Road, Chilton Industrial Estate, Sudbury, Suffolk CO10 6XD, Tel: Sudbury (07873) 76481.

The post is open to male and female applicants.

Thames Water

Programmer Wrexham

Air Products Limited is a leading manufacturer and distributor of industrial gases, operating plants and depots throughout the UK.

We now require a Programmer at our Engineering Works at Wrexham in North Wales. Part of an international organisation, the company operates computers and terminals throughout the UK, Europe and the U.S.A.

The European operation is served by an IBM 360/65 750 megabyte computer and the Engineering Works operates a large Data 100 terminal link with various other TP options.

We expect the successful applicant to have a basic grounding in COBOL with experience on commercial systems. Training in other aspects will be given. Salary will be in excess of £5,500 and is currently under review.

Please apply in writing to:

The Personnel Manager, Air Products Limited, Acrefair, Wrexham, Clwyd, N. Wales.

Air Products

Analyst/Programmers

Halstead, Essex

We are the European Medical Division of Corning Glass Works - a large US multinational corporation. We develop, manufacture and market in-vitro clinical instruments.

We now have opportunities for a number of Programmer/Analysts to take responsibility for:

- examining proposed information systems
- preparing projects and agreeing their specification with relevant departments
- planning, writing, testing and documenting programs to run on the computer
- providing operating instructions together with standard utilities for the execution of a given system.

Educated to 'A' level standard, successful applicants will have 18-23 months experience of RPG II/System 3 and the ability to work effectively in a small team.

We offer an attractive salary and generous benefits package including relocation costs where appropriate. Career prospects within this worldwide Group are excellent.

For further details and an application form, please contact Brian Murray, Personnel Manager, Corning Medical, Corning Limited, Northern Road, Chilton Industrial Estate, Sudbury, Suffolk CO10 6XD, Tel: Sudbury (07873) 76481.

CORNING

Computer Operators

Rutherford Laboratory

Vacancies for Computer Operators have arisen at Rutherford Laboratory, at Chilton (near Didcot, Oxon.).

The Computer Operations Group runs an extensive computing service for the Science Research Council. Two large IBM 360/196 computers are in use, supported by an international network of work stations and terminals.

A Univac 1108 installation will also be added to this configuration in the next few months.

Previous experience, with either IBM or Univac equipment, whilst not essential, would be an added advantage.

Since the computers are in continuous operation, candidates must be prepared for varied shift work, for which additional allowances will be paid. Working conditions are excellent - there is a restaurant as well as shopping and recreational facilities, and shift transport runs to selected local centres. Plus generous holidays, sick leave allowance and contributory superannuation scheme.

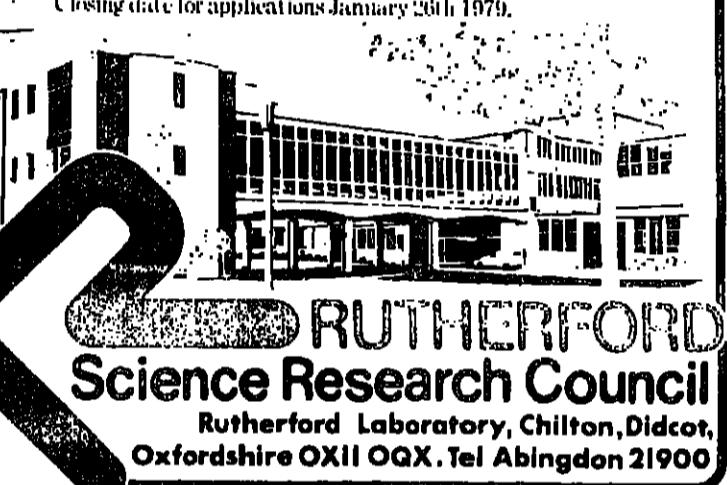
Salaries will be related to the following grades, depending on qualifications and experience:

S.O. Degree or HNC in Mathematics or Computing.
Salary £3037-£1721.

A.S.O. GCE O level in 4 subjects including English Language and a Science subject.
Salary £2341 (age 18) £2851 (age 21) £2922 £22 or over, rising to £3531.

TRAINEE DATA PROCESSOR No formal qualifications required.
Salary £10.43 (age 18) £15.92 (age 21) or over per week.

DATA PROCESSOR (After training) £15.92 £53.66 per week.
Contact Ruth-Jean in the Personnel Group on Abingdon 0235-21900 Ext. 510.
Or write to her quoting reference VN 765.
Closing date for applications January 20th 1979.



OPERATIONS DEVELOPMENT STAFF

General Accident, Perth, Scotland

Operations Development implement computer based business systems covering a wide range of insurance and financial applications. The tasks involved include the creation of user manuals, data input design, system testing and resolution of User's queries.

In addition, a wide variety of support functions are performed for the Operations Section.

New equipment scheduled for delivery during 1979 includes an IBM 3031 4MB, 3350 disc drives, 3420 tapes and 3211 printer. A software upgrade to VM and MVS is commencing very shortly.

Applications are invited to fill the vacancies created by this expansion. Experience gained outside the day-to-day operations environment is essential and some positions require a knowledge of OS/MVS JCL. Detailed experience in a Development post would be particularly valuable.

Applications Project Leader c. £5,800.

Operations Development Analyst c. £4,300.

Benefits include: Reduced Mortgage facility
Relocation Assistance
Non-Contributory Pension and Group Life Schemes
Flexible Hours

To obtain further information on these vacancies and other opportunities within the Operations area, write or telephone (free from charge):

G. M. Nicol, Operations Manager,
General Accident, Perth, Scotland
Telephone 0738 21222 (ext 227) or 0738 21633 after office hours.

General Accident

Advanced Systems Software

Technical Support — London and Leeds

Senior Consultants

Consultants

To £7,500

+ bonus

To £7,000

A major computer manufacturer is expanding its advanced technical support team. SENIOR CONSULTANTS and CONSULTANTS are required to work from Central London and Leeds covering installations throughout the U.K.

Involvement will be both pre and post sales, on a range of medium/large mainframe hardware supported by virtual software. Applicants will have a specialist systems software skill — teleprocessing, database or operating systems with either a large user or computer manufacturer.

Candidates must have the ability to communicate with all levels of client and technical personnel. For further information please contact our CROYDON office quoting reference CW 103-9J.

01-686 9693 (24 HOUR ANSPHONE) 061 236 9085 FAULKNER HOUSE, 19, PARK STREET, CROYDON, CR9 1TN FAULKNER STREET, MANCHESTER, M1 4YD

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS

CAPP ASSOCIATES Computing Services Association

MCS Robertson & Scott

Offices in London, Manchester, Glasgow, Edinburgh, Aberdeen, Dublin, Belfast. Offices & affiliates worldwide.

This post is open to both men and women.

Recruitment Advertising • Search & Selection

A major new installation and a planned introduction of advanced management information systems have created an excellent opportunity with a leading manufacturer.

The position requires an individual with proven experience in leading a team of 100 personnel who has the ability to control and motivate staff. The successful candidate will be responsible for a Management Unit which will be involved in the introduction of a Management Information System. He/She should also be able to communicate his ideas and educate others in new computer techniques. This position offers the opportunity to work in a modern developing environment where innovation is encouraged and valued.

A competitive starting salary is offered together with all of the benefits usually associated with a large progressive organisation including relocation assistance where necessary.

Please reply in writing, giving details of your career to date and quoting reference R 44135, to:

The Manager, Confidential Reply Service MCS ROBERTSON & SCOTT, MCS House, 23 Park Circus, Glasgow G1 4AS

All letters will be opened, acknowledged and forwarded to our client. Please list separately any companies to which your application should not be sent.

This vacancy is open to male and female candidates.

SYSTEMS ANALYST/PROGRAMMER

(Ref. RN.545)

(Scientific and Technical Applications)

£6,622-£8,084 p.a.

p.

Applications are invited for the above post in the Computer Services Technical Systems team based at the Authority's computer centre in Central Bradford. Duties include the provision of support to engineering and scientific users and the development and implementation of a wide range of technical programs and packages on the Authority's ICL 2907.

Applicants, male or female, should hold a degree,

preferably in Mathematics, Engineering or a Scientific subject and have had at least three years' practical experience in the technical computer applications field.

A working knowledge of one or more of FORTRAN,

ALGOL, BASIC or COBOL would be an advantage.

Relocation expenses and disturbance allowance are payable in approved cases.

Application forms are available from the Regional Personnel Officer, Yorkshire Water Authority, West Riding House, 67 Atherton Street, Leeds LS1 5AA (Tel: Leeds 442001 ext. 269), to whom they should be returned by 16th January, 1979, quoting the appropriate reference number.

We are looking for an all round computer operator with a good understanding of computer systems and experience in data processing.

We are looking for an all round computer operator with a good understanding of computer systems and experience in data processing.

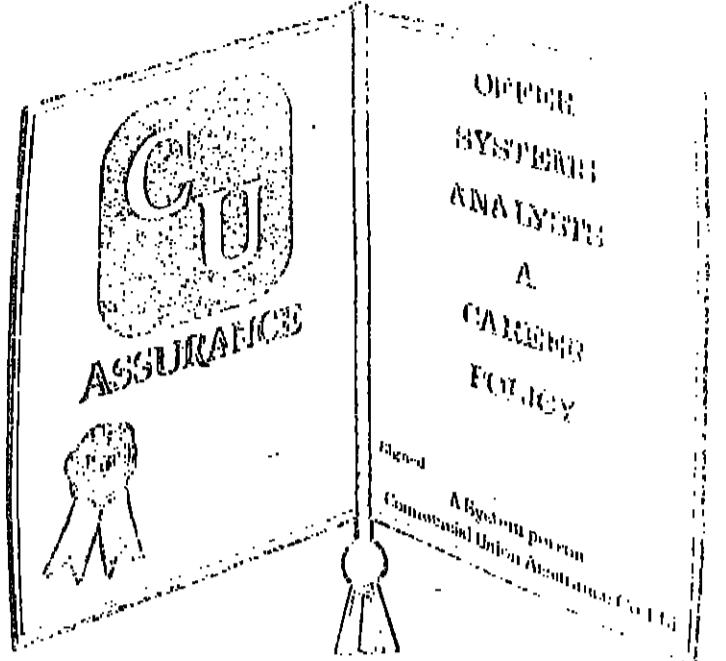
We are looking for an all round computer operator with a good understanding of computer systems and experience in data processing.

We are looking for an all round computer operator with a good understanding of

Why relocate, Survey?

Commercial Union Assurance offer the benefits of working for a major insurance company, in a modern, technical environment.

- * Salary £6000—£6500
- * Preferential Mortgage (5%)
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- * 33½ hour Flexitime Week
- * Paid Overtime
- * Free Lunches
- * Easy Travel
- * Excellent Working Conditions



What benefits do you need to offer in return?

- * A minimum 2 years Systems experience
- * Experience from feasibility to successful implementation
- * A programming background
- * The ability to work on batch, or on-line systems
- * To work in the development of new and the enhancement of existing systems

Please telephone or write for further details.
Quote CW 104-9J

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS

CAPP ASSOCIATES Computing Services Association
LONDON AND MANCHESTER

HEAD OFFICE 01-686 9603 (24 HOUR ANSWERPHONE)
19 PARK STREET, CROYDON CR9 1TN

NORTHERN OFFICE 061 236 9085 (24 HOUR ANSWERPHONE)
PAUL KNERI HOUSE, PAUL KNERI STREET, MANCHESTER M1 4YD

Head of Computer Operations

INTERNATIONAL BANK

LOCATION: City of London

SALARY: Circa £9,500 plus significant bank benefits

Our client is a very well known International Bank. They now wish to recruit someone to take complete charge of their Operations Department. Currently, the department is about 20 people strong and a major hardware upgrade is anticipated for the coming year. The department is already established but it is felt that it needs now to introduce a strong 'people and technical' manager.

We would therefore like to meet someone who has a record of management success in a computer environment. Ideally, the applicant will already be controlling an operations department, but could just as likely come from a systems and programming management position. However, the successful candidate must be able to supply positive leadership, enthusiasm and a proven ability to get things done on time.

The environment is a very time critical one, and to cope with this it is essential that existing standards are improved, and where they are lacking — provided. You must also be able to communicate effectively and relate to members of staff at all levels. A banking background would be considered an advantage, although this is not essential. Certainly, experience of working in a financial environment is desirable.

We are looking for someone who will quickly improve the performance of this department and will understand the necessity to be 'on call' at other than normal working hours when the situation so warrants. If you feel you have the dynamism and the ability to take this important challenge, we would like to hear from you. Please send a history of yourself to John Goldsmith.

Ref: 2167/CW

WE ARE ALWAYS INTERESTED IN HELPING YOU WITH YOUR CAREER

John Goldsmith (Computer Recruitment) Ltd, 15 Buckingham Palace Road, London, S.W.1

Tel: 01-828 5356 - 24 hour answerphone service

CSA Computing Services Association

JOHN GOLDSMITH

(Computer Recruitment) Ltd.

RECRUITMENT CONSULTANTS

Enq. CONTRACT PROG. Switzerland PDP 11/34 bureau installation. Must have RSTS. Immediate position. Accounts systems experience preferred.

c2BK + car SYSTEMS MANAGER 8. Herts Ideally with an O & M background with manufacturing industry experience for IBM S32 installation. Full relocation costs if appropriate.

c2BK JNR. ANAL/PROGS. Bucks/Suffolk Minimum six months experience and knowledge of RPG2 for junior positions in development team with Burroughs installation

ENR. JUNIOR PROGRAMMER Herts At least one year's experience for new Honeywell installation using RPG2 Lots of growth in well-established international company.

168 Finchley Road, London, NW3 6HP

OCC Computer Personnel Limited
16 Bedford Row
London WC1R 4EB
01-242 9356

Please ring Renée Nutt on 01-242 9356 or write to the address quoted
If it would be more convenient to telephone in the evening or during the weekend please ring 874 6372

Our clients "Société Européenne de Mini-Informatique et de Systèmes" is expanding its operation to the UK market. A member of THOMSON-CSF, one of the world's leaders in electronics SEMS is currently marketing worldwide a range of MINI Computers including the SOLAR and the MITRA series, offering a wide ranging involvement in the industrial, scientific and also business systems markets.

SEMS



THOMSON-CSF

The following key positions are to be filled.

to £9,000 + car

A Support Specialist is required to provide essential technical support to the sales activity in the U.K. for SEMS products. Customers requirements will need to be analysed and defined to result in creative and professional proposals.

This position calls for sound experience in the industry, including mini involvement and a customer environment orientation, ideally gained with a computer manufacturer or a consultancy. Ref: 500/CW/Renée Nutt.

to £9,000

The Software Support function will assume a strong technical involvement leading to the successful installation of basic software as well as implementation of customers systems. A deep technical background is essential, much of it gained in the mini computer field. Previous responsibility at an equivalent level would be ideal. Ref: 501/CW/Renée Nutt.

Up to £8500 + Car

BASED LONDON N.W.

Do you enjoy travel and variety? Have you got a sound background (defence, scientific or commercial) on minis or small business systems? Can you speak a foreign language?

If so, you could be interested in this London-based job with our clients, the market leaders in the word-processing field, currently experiencing tremendous growth. The job involves both pre-sales and post-sales implementation and support. Career prospects are excellent, and there may be an opportunity to relocate to Europe.

For Area A, Spanish or knowledge of some other Latin language would be particularly useful, but not mandatory.

If you are not so good at languages you could be on for Area B. However, candidates with some capability in German or another Northern European language would have an advantage.

Please ring us for a confidential discussion, quoting ref. 970 or leave a message on our answering machine after hours and we'll contact you.

EDP SYSTEMS 01-637
52-53 Margaret St, London WIN 7FF 5796

WORTHING BOROUGH COUNCIL
COBOL PROGRAMMER

Salary up to £5,073 plus Housing*

An ambitious programmer with good experience is required to take a leading part in the development of an on-line financial management information system using ICL 2904 hardware, 7602a and V.D.U.s. The work will be challenging and a high standard of output is sought.

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Salary up to £6,073 per annum offered to the successful candidate possessing the required ability and experience.

Telephone 0903 37111 (Ext. 47) for further details and an application form which should be returned to the Borough Management Services and Personnel Officer, Town Hall, Worthing BN1 1LG by 26th January 1979.

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UNIVERSITY OF LEICESTER

COMPUTER OPERATOR

The Computer Laboratory has a vacancy for an experienced computer operator. The Laboratory provides the central computing services for this University and associated Medical School. It is equipped with DEC Cyber 182 systems, a wide range of peripherals and a campus network based on PDP 11s. Knibworth of Control Data equipment will be a considerable advantage, but is not essential. Salary, £2,774 per annum, plus £1,000 per annum for a range from £3,074 to £3,774 with an additional £231 x two-shift allowance.

Salary on Other Related Staff Scale IB (£3,384 - £5,604) with appropriate grading.

Further particulars from The Secretary, The University, Leicester, with whom applications (2 copies) should be lodged by February 2, 1979.

UNIVERSITY OF ABERDEEN

TEMPORARY PROGRAMMER

Applications are invited from suitably qualified persons for above post in Data Processing. The post is tenable for one year in the first instance, but may be extended.

An administrative/library computer (DEC 8050) has recently been installed and includes large disks, VDU's and light-pens. The initial applications areas will be library, finance and student records. A knowledge of COBOL is desirable.

Salary on Other Related Staff Scale IB (£3,384 - £5,604) with appropriate grading.

Further particulars from The Secretary, The University, Aberdeen, with whom applications (2 copies) should be lodged by February 2, 1979.

THE NEW YEAR AT AMERICAN EXPRESS COULD OFFER YOU A WIDENING OF YOUR CAREER HORIZON

The Card Division of American Express continues to expand its Computer Systems Group. They now have a requirement to recruit a number of staff to fill completely new vacancies. This is due to significant expansion of business and also a greater commitment to the development of computer systems that will improve the development of that business.

The positions advertised very significantly in status and job content, and some form part of the International Systems Group. All positions offer excellent salaries and a large number offer a mortgage subsidy. There is a non-contributory life and pension scheme, plus a heavily subsidised staff restaurant. The working conditions are first-class, and being based in Brighton offers one of the most attractive locations in Southern England.

Programmers

We are looking for Programmers and Lead Programmers. Experience ideally will be in an IBM environment, with a strong COBOL or Assembler background. Experience should extend from 1 year to 5 years depending upon the level of position applied for. There are advantages in both positions; full training will be provided to keep you up-to-date technically; at the senior level, you will have the opportunity to either manage people or assist in the management of people. The career opportunity can later widen either into systems or into software. Ref. 2145/CW.

Systems Programmers

Systems Software Specialists

Again these positions vary in status and depend entirely on the length of time and the responsibility that has had in the area. We are looking for people with an Assembler background in an IBM environment with knowledge of OS/VS1. You also will have some of the following experience:

Performance monitoring, tuning evaluation and capacity planning. Software package evaluation in the fields of operations support, applications development and testing and productivity aids. If you have worked with ROSCOE, CICS/VS, DL/1, VSAM or VTAM, you are certainly someone we would like to know.

Again the career opportunity is a good one. An opportunity that can only be provided in a fast growing organisation such as American Express. Ref. 2146/CW.

International Systems Group

The International Systems Group is responsible for the development of systems in many parts of Europe. Some of the positions advertised will require some European travel. Two major projects are currently on hand, one is a General Ledger project and the other is an International Accounts Payable project.

Lead Programmer

We are looking for someone with a strong Burroughs background. American Express are installing hardware in the Burroughs 1700 range in a number of European centres and they are looking for someone based in Brighton, to join them at a senior level within their programming group. Ideally, you should have between 2 and 3 years' experience and be capable of significant self-motivation and ability to work under pressure. Ref. 2148/CW.

Analysts

As previously mentioned, the systems developed in the International Systems Group are largely accounting based, therefore, we would like to meet Analysts who have experience of working in a financial systems environment. We hope that they can bring knowledge of the two systems mentioned and will probably find the international aspect of this systems development a very interesting challenge. We are looking for people at several different levels and you should have at least 2 years' experience of working in a systems environment that has got things done. Ref. 2150/CW.

User Support Analyst

This position, attached to the International Systems Group, is a very responsible and interesting one. It will require significant international travel in Europe. The job will be to write-up procedures for new systems, generally advise users of their responsibilities and ensure that adequate documentation is produced for new systems. Ref. 2150/CW.

The main personal requirements are: a detailed knowledge of systems design, experience of current computer hardware and some programming experience. A data communications background would also be a significant advantage. The selected applicants will be expected to operate at a senior level and therefore will be able to negotiate confidently at all levels of management. Ref. 2151/CW.

Research and Development Analysts

The main responsibilities of the Research and Development Group will be to research and evaluate new hardware and to assess new technology and products and their impact on the Card Division's business objectives. This new group has responsibility for computer Research and Development not only in the United Kingdom but also for American Express' computer activities in Europe.

The main personal requirements are: a detailed knowledge of systems design, experience of current computer hardware and some programming experience. A data communications background would also be a significant advantage. The selected applicants will be expected to operate at a senior level and therefore will be able to negotiate confidently at all levels of management. Ref. 2151/CW.

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Computing Services Association

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Applicants should write, giving full details of education and career to date and quoting references, to: The Personnel Officer, Airsprung Limited, Canal Road, Trowbridge, Wiltshire, BA14 8RC.

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We are interested in meeting people with either APL, Fortran or equivalent scientific programming experience backed up by proven mathematical ability and good communication skills in view of the amount of internal liaison involved. We would also consider a recent graduate in a numerate subject, ideally with some scientific or computer experience. In which case full APL training will be given.

Salary level will vary according to age and experience but will be competitive and offered in conjunction with an attractive range of benefits and exceptional career prospects within a highly successful international organisation.

For further details please contact Denise Lincoln, Rank Xerox (UK), Ltd, Bridge House, Oxford Road, Uxbridge, Middlesex, Tel: 0895 511333.

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Salary on a scale up to £4000 (including London Allowance). Commensurate with qualifications and experience.

Applications should be made to the Head of the Computer Centre, Polytechnic of North London, Holloway Road, London N7 8BL.

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Ref: 1041

FOR DETAILS OF THESE AND OTHER VACANCIES PLEASE CONTACT JOAN JOHNSTONE

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Salary within the range £2880-£3125 (levels under review). Programmers with at least three years' experience in the design and development of real-time systems including teleprocessing. Applications should show at least five years' experience of systems work and have a sound knowledge of COBOL. Some experience with BASIC or PL/I would be an advantage.

Programmer
Salary within the range £2880-£3125 (levels under review). Programmers with at least three years' experience in the design and development of real-time systems including teleprocessing. Applications should show at least five years' experience of systems work and have a sound knowledge of COBOL. Some experience with BASIC or PL/I would be an advantage.

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Ring David Abbey for further details on 01-261 8016.

Systems Support Engineers International

Get out of the rut. Itel can offer you variety, stimulation, and security in an international environment - decide now to make 1979 the turning-point in your career.

Itel is one of the world's largest suppliers of IBM-compatible mainframes, marketing and maintaining a wide range of products throughout the United States, Europe, the Middle East and Africa. As a result of expansion we are now seeking additional Systems Support Engineers to be based in London and to operate internationally offering technical assistance to country support groups.

The successful candidates will assist marketing staff with the technical preparation and presentation of proposals, help customers with product planning and implementation, work towards the requirements of international support objectives and contribute to the planning and implementation of international training programs.

Applicants should have experience of heavy IBM systems together with a good knowledge of Internals. A general marketing orientation together with a willingness to travel extensively is also required. In return, Itel will offer a salary in excess of £10,000 p.a. plus a wide range of valuable fringe benefits.

This is a rare opportunity to join a dynamic international team in a successful and expanding company where results count. Don't miss it - phone for more details or send your CV to: Barry Martin, Itel International (Europe) Corporation, Bowater House, 68 Knightsbridge, London S.W.1. Tel: 581 5050.

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Consultancy/Software House

Wimbledon

up to £9K plus

PERMANENT STAFF

The Cross Computer Group Ltd. is a long established, growing Consultancy and Software house, providing services to a number of Reinsurance Companies, Insurance Companies, Commercial and Government Organisations both in this country and overseas. The work is largely "in-house", based at our offices very close to Wimbledon main-line and underground station, but occasional visits to client sites may be required.

We are still small enough to offer a friendly personal but professional working environment and are dedicated to providing the best possible service to their clients.

The Group has its own in-house Computer System, offering interactive development facilities, through VDU screens, in a virtual storage environment, on modern sophisticated equipment.

There are a wide variety of permanent positions available and salaries reflect the importance placed upon the need to employ conscientious people with ability and responsibility.

Salaries start from around £3,500 per annum for junior staff to an earning potential in excess of £9,000.

Technical Consultants

The requirement here is for experienced senior analysts with personal and analytical communication skills. They will take on a customer liaison role, carrying a little marketing, but have the technical ability to follow through to completion of a project management capacity. It is likely that such people will be older than 27 years, with a degree, or equivalent, and some 6 years' experience in data processing.

Analysts

The Group is developing a major on-line package for the Reinsurance Industry and needs good analysts (at various levels) with on-line and financial systems experience. General commercial analysis are also required for work in other areas.

Analyst / Programmers and Programmers

The above-mentioned on-line package is written in COBOL (ANSI). We require several Programmers for this and other projects, a minimum of 2 years COBOL and/or RPG will be required.

CONTRACT STAFF — Long Contracts

Analysts and Programmers with COBOL experience are also required for the above projects.

CORAL and/or ASSEMBLER Programmers with experience on RHL, IMI, MINI systems, (training given), degree level

matriculation background and with some programming.

Contact Colin Singleton, Barry House, 20-22 Wimpole Road, Wimbledon, London SW13 4HH. Telephone 01-947 7411.

CORAL CONTRACTS WEST LONDON

To £300 p.wk.

RE-ADVERTISEMENT

Applications are invited for the post of

SCIENTIFIC PROGRAMMER

Grade II, or the equivalent of Observatory and Radio Astronomer.

Maternity Hospital Salary Scale £3284-£3800 plus £1000 for night duty.

The functions of this post are to support a new PDP11 programmable vehicle-job entry and control system for the University CEC computer installation. The work will involve an interesting variety of software development plus the opportunity to become involved in the use of mass spectrometry. The successful applicant will work in a small, lively research department with a lot of scope for individual development.

A scientific background would be an advantage and registration for a higher degree would also be a possibility.

Further details may be obtained from the Head of the Department of Physics and Mathematics, Mrs. G. D. St. John, Royal Holloway College, Egham, Surrey, TW20 0EX.

Applications, together with curriculum vitae and the names and addresses of 2 referees, should be sent to Dr G. S. King, Chemical Pathology Department, Guy's Hospital, London SE1 1HL, by Friday, February 2, 1979.

Re-advertisement is necessary due to the failure of the appointed person to take up the post.

Previous applicants who wish to be reconsidered should apply directly to Dr. King.

COBAL CONTRACTS LONDON—WEST END

To £280 p.wk.

Experienced Programmer required for assignment with a Large Engineering Company. 2 years' plus Cobol prefer. univac or IBM.

Interested ring Bill Byrne on 01-629 7262.

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- SALARY** — By negotiation and according to experience — circa DM46K to DM60K.
- TAX** — Lower than UK.
- ADDITIONAL BENEFITS** — House move assistance — German language training — Family education facilities — Medical Insurance.
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- They will want to hire self sufficient and ambitious computer professionals who wish to take project responsibility. They will look for individuals whose skills in programming and systems are current and who are looking for a move to Europe that has real prospects.
- ACTION** — Phone for initial discussion or write for an appointment. Ref. DS3.



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We are looking for experienced systems people to spearhead our attack on the medium-to-large systems market with our revolutionary new products.

You will probably have some three years' experience with medium/large IBM, ICL, Univac, Honeywell Systems. A good knowledge of Assembler and Cobol, DOS/VIS — VM/370 or equivalent. A knowledge of PL/I or RPG-II would be an advantage.

After formal product training you may choose to work in MUNICH-FRANKFURT-DUSSELDORF or HAMBURG and a full German language course will be provided.

ACTION — Phone or write quoting reference DS-2 for an informed discussion and an interview in London.



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Our clients, leaders in their field, wish to appoint an I.B.M. Software Support Specialist, to be responsible for advising and guiding customers and supporting the sales force.

This is a key appointment, and is vital to the company's continued success.

You should have a knowledge of I.B.M. hardware, software and teleprocessing. An in-depth knowledge of DOS/VIS or VSI would be an advantage.

You will be based in the North/Midlands but will be required to travel the U.K. with occasional overnight stopovers.

You will work very closely with the sales/marketing teams and will also be involved with planning, implementation, customer presentations etc.

You will be offered an EXCELLENT SALARY, 2 LITRE CAR, EXPENSES, BUPA, PENSION, L.V.s, etc., plus a great opportunity for CAREER PROGRESSION.

Please phone a.s.a.p. for a meeting and discussion.

Ref. No. JFEG - 1



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Our clients are setting up a new position for the U.K. It is an important appointment. You will be the "Head Honcho" responsible for all activities regarding I.B.M. systems in the United Kingdom.

You will advise on strategy, tactics, hardware, software, facilities, utilities, etc., and be involved with presentations, demos, benchmarks, advising and guiding the sales/marketing organisation.

Career prospects are excellent. You will be working in H.Q., alongside Directors and Senior Managers, with the opportunity of making a name for yourself.

Do you want a big job? . . . A challenge? . . . An opportunity? . . . Hard work? . . . Real prospects? . . .

Please telephone for a discussion, and to arrange a meeting.

Ref. No. JFEG - 2



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Don't miss it!



GERMANY SYSTEMS SOFTWARE DEVELOPMENT

To DM 60,000

This is a unique opportunity for SOFTWARE PROGRAMMERS and ANALYSTS to join an outstandingly successful international computer manufacturer.

New hardware and software development will take this mini-computer supplier into the medium-to-large "General Purpose Systems" arena. They have committed more than 700 hardware and software developers to exploit new technology, and opportunities exist for software development staff at all levels to join established, or lead new development teams.

Successful applicants will be able to get their teeth into:-

- Developing operations systems
- Building compilers
- Developing systems utilities
- Developing computer networks
- The design and implementation of software diagnostics for production etc. etc.

If you have relevant experience and are looking for a real challenge this could be for you! You will receive full product training; a comprehensive German language course; relocation expenses and realistic earnings of up to DM 60K.

INTERESTED? Ring us quoting Ref. DS-1 for a brief career evaluation after which we will be pleased to arrange interviews in London.



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ENGINEERS

Do You Have What it Takes To Be A

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For instance, 4 to 5 years' Mainframe Systems Experience, Hardware and operating software, ideally IBM 370, although all disciplines welcome to apply.

We can offer a number of opportunities to selected engineers to live and work in GERMANY on a new and exciting product range being developed by an International Mini Computer Manufacturer, with excellent career development prospects.

If you feel you can justify a salary of up to £25K per annum plus relocation expenses and a car, as well as 4 weeks' annual holiday and paid time off to attend German lessons:

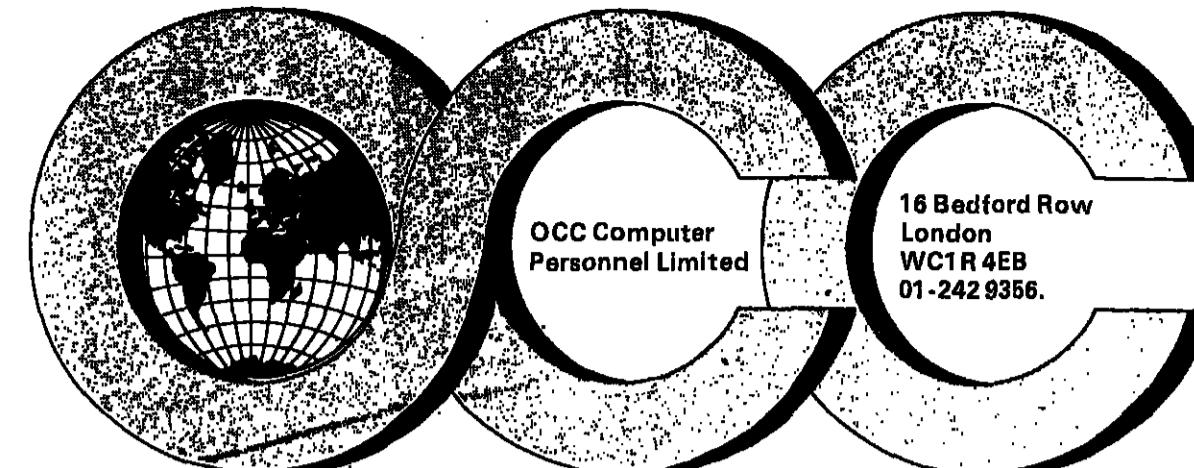
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Germany DM 55,000 – DM 80,000

Our Client, a successful and well established European based consultancy, is currently recruiting for a number of projects with initial renegotiable contract periods of between one and two years.

For all positions English is the working language, although some German ability could be useful.

Data Base Designers

This development project involves the design and development of new Data Base systems. Previous experience should include good internals knowledge and design and implementation of Data Base systems, such as TOTAL, DMS, IMS, IDS, ADABAS, etc., or involvement with related systems software.

Operating Systems Designers

A new Operating System is being developed for a large and sophisticated multi main-frame configuration with Data Base and Communications facilities. Design experience on large Operating Systems, e.g. Exec 8, G.III/IV, IBM OS, GCOS etc., would be very relevant, although experience on smaller systems in related areas would also be of interest.

Communications Systems

Communications software is also being developed in conjunction with the above project. Experience associated with Terminal Handling, Graphics Displays, Teleprinters, Message Switching/Handling, Networks, Data Communications, Concentrators etc., is required for this project. Experience on Varian hardware would be useful for one particular project.

Airport Control Systems

This project involves the development of systems associated with Air Traffic Control, Cargo Handling and Reservation Systems based on large mainframe hardware with Data Base facilities. Analysts and Analyst Programmers are required for this project.

Applications Programmers

Several Programmers with Assembler and/or COBOL backgrounds are required for commercially orientated projects in Southern Germany. IBM 360/370 or similar type hardware experience is required. Start dates are likely to be during March 1979.

Northern Europe To around £16,000

Commercial Projects

Analyst Programmers and Programmers are also required by the above client for commercially orientated assignments. Experience should include Univac 1100 JCL plus FORTRAN and/or COBOL although FORTRAN and COBOL on other hardware will be considered.

To apply for these positions, or for further details, please contact Roger Allington on 01-242 9356 (day) or Berkhamsted (04427) 2299 (evenings or weekends) if more convenient.

Ref. 111/CW/RA



MYRIAD

BASILDON

PROGRAMMER

To £6250

This is an excellent opportunity to join a progressive D.P. department. Our client will shortly install the new IBM 8140 distributed processor which they will utilise both to front-end large 370 mainframes at a remote site and to process on-site at their Basildon headquarters.

We wish to appoint an experienced programmer who will play an important role in the further development of computing facilities for the organisation.

Candidates should offer sound COBOL programming experience, preferably gained in a manufacturing environment. Most important is the ability to function well without constant supervision and to have the potential to develop a successful career with a forward looking organisation.

- Ref. SE1/1101

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

JBA

SOFTWARE DEVELOPMENT/ SUPPORT ON-LINE COMMUNICATIONS NETWORK

Our client, part of a large and diverse British manufacturing group and itself a very substantial company, is currently developing a new range of commercial systems for both their IBM 370/139 and a new on-line network of 8 PDP 11/70s.

To provide development and software support for the installation of the new network, the following professional programmers are urgently required:

Software Specialists

salary to £16,000 p.a.
Candidates should possess extensive knowledge of DEC software comprising a minimum of 3 years in software, preferably on RSX 11M systems. The appointee will be supporting both the network system and the applications programming teams - a wide range of responsibilities.

Assembler Programmers

salary to £16,000 p.a.
The successful candidates will be working on the development of the communications network so preferred applicants will have an RSX 11M/MACRO 11 background. However, applicants with at least 2 years ASSEMBLER/11 experience on other types of hardware will be considered and appointed will be given full DEC training.

Contact Margaret Stevens for more details.

JAMES BAKER ASSOCIATES
International Personnel Consultants
16 Maddox Street, London W1
Telephone 01-431 4776

drj, in 1101

A NEW CAREER IN SCOTLAND!

On February 1, 1979, a special recruitment feature highlighting career opportunities and job prospects in Scotland will be published.

To advertise in this important feature contact:

Owen Kelly on 061-872 4211
or
John Farrar on 01-261 8098

West Sussex County Council

Assistant Computer Programmer Post No. 192

Trainee Assistant Computer Programmer

Salary £1821-£2885

County Surveyor's Department

The post is one of three providing computing support to Engineers and Technicians in the Transportation Studies Group. Extensive computing facilities are available, and these will be substantially improved during 1979.

Candidates should hold an appropriate degree or other computing qualification and have experience of Fortran and IBM/OS.

If you are qualified to "A" level, then we would consider appointing you as a Junior Trainee on the lower scale with opportunity for academic training in computing.

For further details about the job telephone Roger Jones on extension 2885.

Starting salary will be dependent upon qualifications and experience.

Excellent removal, resettlement and lodgings allowances are payable in approved cases, and there is also the possibility of temporary accommodation.

Application forms from County Surveyor, County Hall, Chichester, or telephone Chichester 785100, Ext. 4137458.

Closing date for applications 28th January, 1979.

HOWARD

PROGRAMMERS
£24,000 P.A.

We require several programmers with experience of CORAL 68, RTL 2, PL/I and/or MACRO II on PDP 11's to work on an interesting overseas contract. The involvement is the software design, coding, implementation and debugging, prior to formal QA of modules within a large suite of programs. A working knowledge of RSX 11M and X26 protocol would be a distinct advantage. The project is operated on a team oriented basis and for the right person represent involvement into late 1980. Telephone now for further details.

The Overseas Recruitment Consultant
HOWARD ORGANISATION INTERNATIONAL LIMITED
Employment Business Section
8 Elstree Way, Boreham Wood, Hertfordshire
Tel: 01-853 4088

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Shiftleaders and Operators with at least 2½ years' experience should contact Andy Woodham or Graham Whitaker on Reading (0734) 581258 extension 36 or 46, reversing the charges. Or write to Andy Woodham, Operations Services, ICL Dataskil, Reading Bridge House, Reading RG1 8PN, quoting reference CWII/78.

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Senior Computer Operators Master Terminal Operators

Our equipment consists of 1 x 3033, 2 x 370/158 and 2 x 370/145, so you will need experience in at least two of the following areas: VM, DOS/VSE, VSE/VS, HASP/M, MVS, TSO, IMS or CICS. But equally important you should have a genuine interest in computing as a career.

Benefits are those associated with a major company and include 5 weeks' holiday, pension, life assurance and sick pay schemes, substantial discount on BL cars and accessories.

Generous relocation assistance will also be provided to this pleasant, rural area, where housing is favourably priced.

So, if you're looking to be part of a successful team, make your New Year resolution now. Ring Rod Wills on Redditch (0527) 28515 or if you prefer write for an application form to:

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BELGIUM & GERMANY

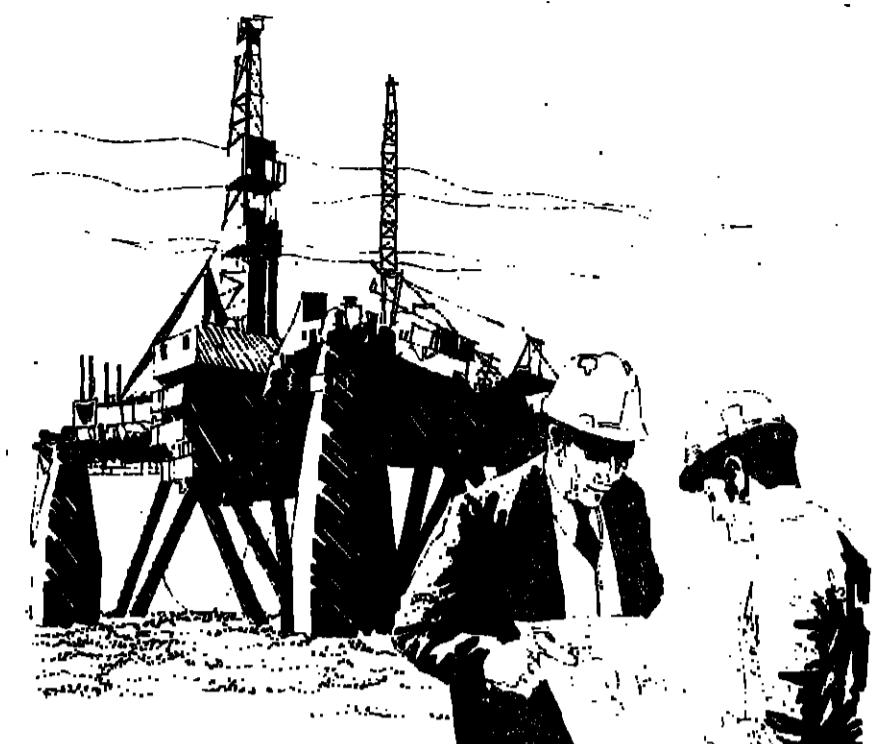
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UNIVERSITY OF THE
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DEPARTMENT OF APPLIED
MATHEMATICS

SENIOR LECTURER/
LECTURER IN THE
DIVISION OF
COMPUTER SCIENCE

Applications are invited from persons with interests in one or more of the following areas: Data Base Theory and Design, Design and Analysis of Algorithms, Numerical Approximation Systems. Applicants will be expected to teach, update and design courses at undergraduate and post graduate level and to participate in research activities.

Applicants should have a masters or doctoral degree and experience in computer science lecturing and research. Although both these conditions may be waived the applicant is in possession of equivalent professional qualifications.

The salary and level of appointment will be determined by qualifications and experience. Salary scales will be reviewed in April 1979 but the following existing ranges can be used as guidelines:

Senior Lecturer:
R10 144-R13 480 per annum
Lecturer:
R7 654 - R11 007 per annum

The University's policy is not to discriminate in the appointment of staff or students based on the grounds of sex. Women applicants, particularly those relating to the present and to the above posts, are invited to make application direct to the Head of the Department of Applied Mathematics, University of the Witwatersrand, Johannesburg 2001 South Africa. All applications should be lodged by 28th February 1979.

O & M OFFICER

6012-0345

Applications are invited for the post of O & M Officer following training, carried by postgraduate.

The post involves a Principal O & M Officer for undertaking O & M investigations in all three Estates. Departments of the Council are also the O & M function's main responsibility. The post involves planning, preparation and carrying out and reporting on O & M investigations.

Successful applicants will be assigned to the Computer Unit and an early assignment of O & M work will be made to them in a joint project with Computer staff on the long term strategic review of the Council's computer utilisation.

Applicants should be capable of discussing work effectively with senior management, preparing clear and concise reports, experiencing in the preparation and capable of dealing with all stages of investigations with the minimum of supervision. Higher qualifications may be educated to degree standard or have a suitable professional qualification, and have three years relevant experience. Knowledge of computers and their use would be desirable but is not essential.

Application form from Personnel and Management Services Officer, London Borough of Greenwich, Peggy Muddleton House, 50 Woolwich New Road, London SE18 8HD. Tel: 01-854 8888 ext 2118.

Closing date: 26th January 1979

The Council is an equal opportunities employer. All applicants will be considered, irrespective of sex or country of origin.

GREENWICH

Hertfordshire
County Council
MID-HERTS/BOREHAM
WOOD COLLEGE
Department of Computing,
Science & Technology

LECTURER I
for Programming (COBOL and
BASIC) and Business Data Processing
and Applications. Applications
enclosed, preferably with teacher training or experience.
Part-time applicants also welcome.

Further information and application
form from the Principal,
Elstree Way, Boreham Wood,
Herts (Tel: 01-863 6024/5).

UNIVERSITY OF AFRICA
DEPARTMENT OF ARCHITECTURE
COMPUTER
PROGRAMMER - SRC
GRANT

(22 hours weekly)

To help in the development of a computer system for teaching production processes in the building industry. A knowledge of architecture, construction and design, CAD and any related subjects is required.

Salary: £7,458-£9,228 p.a. including London weighting allowance.

26 days annual leave plus additional leave at public holidays.

Partial mortgage interest rebate, contributory pension scheme, Staff Restaurant, Refreshment expenses.

Application forms and further details available on request from:

The General Secretary, National and Local Government Officers Association, 1 Marsham Place, London SW1A 1BA.

Telephone: 01-830 2171.

Closing date for receiving completed applications for
vacancies: 1st March 1979.

D.P. OPPORTUNITIES OIL RELATED ENGINEERING

McDermott is one of the leading names in the field of offshore engineering. Employing over 25,000 worldwide, we are involved in the design, fabrication, installation and overall construction management of sophisticated marine engineering projects providing a comprehensive service to the oil and process industries.

To keep our projects on target we now wish to recruit the following personnel who can make an immediate contribution to our continued success:

Senior Analyst Programmers

Middle
(c.£8000)

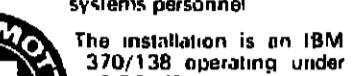
Required to both develop and modify commercial systems using our IBM 370/138 with OS/VS1 and provide assistance in the transition from batch to on-line systems.

Agud 25-35 and educated to degree level, applicants male or female, must have a thorough knowledge of OS, PL1 and CICS (IDMS). Database experience would be an advantage. In addition, we will be looking for the ability to develop effective systems on schedule and produce a high standard of documentation for management, programmers, operators and users.

This challenging position calls for degree calibre applicants with a minimum of four years D.P. experience, one of which must be in systems. The contract is available for married or single status employees and we can offer a very attractive range of benefits.

Full job description and employment details available on application.

To apply for either of the above positions you should write giving full details of your career to date to: I. R. Spinks, Personnel Supervisor, McDermott Engineering London, McDermott House, 140 Wembley Park Drive, Wembley, Middlesex.



McDERMOTT ENGINEERING

Senior SYSTEMS ANALYST

LONDON W1

Up to £7,500

This is an opportunity for an experienced Systems Analyst to join a major West End (Mayfair) installation, and to work on a variety of new projects, using database, transaction processing and communications techniques. However, knowledge of such techniques is not mandatory — appropriate training will be provided.

Our clients have a large dual processor mainframe with extensive communications facilities. There is ample development work, often of a technically challenging nature, and the environment is one of good professional standards. There will be a cost of living increment next April, and fringe benefits include a non-contributory pension scheme and a staff restaurant.

This opportunity will interest well educated, presentable and articulate individuals who have had a sound computing background, including several years systems analysis, and who now wish to extend and update their experience. Team leadership experience of capability would be valuable.

Please ring us in confidence for a preliminary discussion, quoting ref. 672, or leave a message on our answering machine and we will contact you.

EDP SYSTEMS 01.637 5796

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ICL GII	SHIFT LDR	2 YR	£4800	W. LONDON
ICL GII	OPERATOR	1 YR	£4300	C. LONDON
ICL 2800	OPERATOR	1 YR	£4000+	E. LONDON

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Systems Analyst
Commercial/Business Systems
Systems Programmer
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ICL 1900 G2 and Manual Operators
ICL System 4 J1800 Operators

FORTHCOMING
By the end of January we will be needing between 20 and 30 IBM OS and DOS, ICL G1/2/3, ICL 2803/2860, Honeywell (all), and Univac Operations Staff.

We pay excellent rates (and expenses)



01-439 6481
(24-HOUR ANSWERING SERVICE)

RECRUITMENT CONSULTANTS

In 1978 Effectia Gravis once again confirmed its position as one of the largest, most respected computer personnel consultancies in the U.K.

Business was up from the previous year by over 50% and our aim for 1979 is to maintain this growth rate.

To achieve this, we need more consultants, with the following attributes: common sense, the ability to communicate on all levels, and the will to succeed.

Quote ref. EG1.



01-439 6481
(24-HOUR ANSWERING SERVICE)

COMPLETE AND RETURN TO EFFECTIA GRAVIS NOW

(BLOCK CAPITALS PLEASE)

Name (in full)	Address (Permanent)
Telephone: Home	Office
Type of Transport	Date of Birth
Current Position (Contract/Permanent/interim)	Salary/Rate
Position Required (Contract/Permanent/interim)	Salary/Rate
Notice Required/Date Available (delete)	Second Choice
Areas Preferred: First Choice	Second Choice
Experience to date: (Last Position First)	From Mth/Year To Mth/Year
Company: Name and Location	Duties and experience

From Mth/Year To Mth/Year

Duties and experience

Whatever level you have reached in the Computer Industry, you wouldn't be human if the chance of bettering yourself wasn't taken.

Does one or more of the following apply to you?

1. Looking for a new contract?
2. Seeking a more responsible permanent position?
3. Require a more lucrative contract?
4. Want to be financially rewarded for your experience?
5. Need help and advice on your future career?

We could go on listing (ad infinitum) the reasons to complete and return our coupon.

The best New Year idea you could have is to return the completed coupon as soon as possible.

Just in time

01-439 6481 (24-HOUR ANSWERING SERVICE)

EFFECTIA GRAVIS
NATIONAL HOUSE, 88 WARDOUR STREET, LONDON W1V 4TF
COMPUTER PERSONNEL CONSULTANTS
LICENCE NO. SE/102

Req. No.
DATE
DIVISION

Signature

Anglian Water Authority
DATA BASE PROJECT LEADER

Ref. H30010
£7,778-£8,352 including supplement of £312

The Authority is implementing a computer service to support financial and scientific systems. The service is based on a central mainframe computer with data communications links to divisional offices.

A Project Leader is required to be responsible for the design and administration of the data base required to support the Authority's application systems.

Applicants should have expertise in the following areas:

- * Data Analysis
- * Logical data base design
- * Physical data base design (preferably using CODASYL DBMS)
- * Data base performance monitoring
- * Project management

The Authority offers excellent conditions of service and generous removal expenses if relocation is necessary.

If you are interested or want to know more about this opportunity why not call Jonny Spencer at Huntingdon (0480) 86181 Ext. 370 for information and an application form.

The closing date for application is 26th January, 1979, and should be sent to:

ANGLIAN WATER AUTHORITY
Diploma House, Grammer School Walk
Huntingdon, Cambs.

UNITED KINGDOM ATOMIC ENERGY AUTHORITY

Computer Operators at Harwell

We have vacancies for operators to work on the Central IBM 370-168 installation (soon to be replaced by an IBM 3088) at Harwell, providing opportunities to take part in utilising one of the world's largest computing complexes.

Applicants with previous operating experience of IBM computers will have an advantage, but full training will be given to successful candidates.

Starting salary depends on age and experience, with appointments being made in the Data Processor or Senior Data Processor grades. Promotion to Senior Data Processor is often obtainable within 12 months. Operators must all be available for shift working. With shift supplement, the annual salary range for Data Processors is from £2,805 to £3,278 and for Senior Data Processors from £3,942 to £4,333.

For further details and application form, please contact: Mrs. R. A. Stevens, Personnel Department 'B', AERE, Harwell, Oxon OX11 0RA. Telephone: Abingdon (0235) 24141, Ext. 2946.

HARWELL

Potential Sales Executives

Circa £7,000 + Car

for the NORTH and SOUTH to be trained to market their Data Communication Equipment. Ideally we are looking for young men or women with relevant job experience who feel that the opportunity they provide, the right opportunity to develop their career in sales.

Sales Engineer

(Worldwide) C. £10,000 + Car

to market one of its latest developments in the telex multiplexer field. The right man or woman will probably have a technical/engineering background in the telecommunication industry and must be willing to travel extensively. Experience of overseas selling would be advantageous, though full training will be given.

CASE is a young energetic company specialising in the manufacture of data communications systems. The company's products include multiplexers, concentrators, modems and message switching systems. Continuing expansion provides an opportunity to join an enthusiastic informal group in a job where salaries, conditions of service and career opportunities are excellent.

ASSESSMENT
Mercuri Urval
CONSULTANTS

Please write in the first instance, with full personal and career details, quoting reference No. 612 to:
Ross M. Ormond
Mercuri Urval Limited,
135A High Street,
Rickmansworth, Herts. WD3 1AR

Principal Scientific Officer

The Research & Development Division of the British Railways Board at Derby has a vacancy for a Principal Scientific Officer in the Transport Technology Assessment Group. The group undertakes wide-ranging studies to reveal the opportunity for technological advances in the various rail businesses. To aid in the evaluation of emerging proposals we are seeking an experienced individual with professional qualifications or relevant degree to join a small team engaged in developing transportation systems assessment methods.

The work requires expertise in computing (Fortran) and transportation modelling, with a working knowledge of the statistical, econometric and simulation techniques involved.

The person appointed will be expected to initiate and develop analytical methods and also to undertake systems synthesis studies of innovative approaches.

The commencing salary will be within the range £6774 to £6554. There is a contributory pension scheme and the transfer of existing pension rights can, in most cases, be accepted. There are also free and reduced rate rail travel facilities.

Applications stating age, education, qualifications and experience should be sent to:

Headquarters Staff & Services Manager,
British Railways Board,
222 Marylebone Road,
London NW1 8JJ,
quoting reference
RB263.

Computer Programmers

C. £6,500 Herts

Everest Double Glazing, a member of the RTZ Group, are manufacturers and distributors of high quality double glazing products with branches throughout England.

Currently our DP section is expanding its mainframe and consequently Programmers are required to assist in the development of new systems and the maintenance of existing systems.

Men or women, with at least two years' RPG experience, are sought. Applicants should be self-starters, able to work hard and assimilate new data quickly.

As well as a good starting salary, career prospects within the Group are excellent.



a member of
the RTZ Group

LATENT VACANCIES
i.e. JOBS NOT ADVERTISED IN
SURREY, SUSSEX, KENT,
MIDDLESEX, BERKS, HANTS.
FOR ANALYSTS AND PROGRAMMERS

Analytic has shown that jobs advertised by companies are few compared with the total number of jobs available. Latent vacancies account for the greatest number of jobs available now.

Most companies in these areas register their vacancies with our consultancy as we have an established record specialising in the recruitment of computer personnel and executives.

We therefore have extensive knowledge of most latent vacancies in the South and South East - the equivalent, languages, salaries and career prospects. We can inform you of vacancies that suit your requirements in the area of your choice.

This free information is just a phone call away. We have done the job-search, you phone us now and take advantage of our services.

Telephone: Watford (0923) 47321 (Consultant).

TELEPHONE: 0923 47321

TELEPHONE: 0923 4732

WE'VE MADE OUR MOVE NOW MAKE YOURS '79 IS THE YEAR OF THE CONTRACTOR KNIGHT'S CONTRACT DIVISION

MIDLANDS AND N. ENGLAND

IBM			
IMS ANALYST/DESIGNER	c.£250		
NORTHWEST			
CICS DL// COBOL PROGRAMMER ..	c.£230		
NORTHWEST			
CICS PL/I DL/F CONSULTANT ..	c.£250		
MIDLANDS			
IMS PL/1 PROGRAMMER	c.£230		
MIDLANDS			
IMS COBOL PROGRAMMER	c.£230		
MIDLANDS			
COBOL PROGRAMMER	c.£220		
MIDLANDS NORTHWEST			
ICL			
2903 ANALYST/PROGRAMMER	c.£230		
NORTHWEST			
2903 COBOL PROGRAMMERS	c.£220		
NORTH			
2960/70 VMEB/K FORTRAN PROGRAMMER	c.£220		
NORTHWEST			

FOR DETAILS OF THESE AND OTHER CONTRACTS PLEASE RING PERRY BUTLER OR JUDY LEES ON 081-833 9341-5

- ★ High remuneration assured throughout the year
- ★ Security of employment from continuity of work
- ★ Career development from learning new DP techniques
- ★ Overseas opportunities
- ★ Financial advice in all matters of taxation, mortgages, pensions

LONDON & HOME COUNTIES

£220	IBM RPG II + COBOL DOS/VS
£200	UNIVAC 1100
£200	ICL 2903/4 TPS EXP
£220	ICL 1900 COBOL + SOME PLAN
£230	PDP MACRO II RSXIM
£200+	PDP MACRO II RSXIIM PROCESS CONTROL
£200+	MINI FORTRAN
£230+	MINI COMPILER EXP
£220	BURROUGHS 6700 COBOL
£240	CICS COBOL PROG

OVERSEAS

£320	IBM PL/1 DOS PROG
£EXEC	IBM COBOL GERMAN SPEAKING
£375	PDP FORTRAN KN OF FRENCH
£375	PDP MACROII RSXIIM KN OF FRENCH
£450	SYS PROG MVS EXP
£350+	UNIVAC 1100 COBOL
£EX RATE	HONEYWELL 62/40 SNR PROG

Ring Christine Kay or Dave Hayton 734 0152

27 NOEL STREET, W.1
FROM 15th JANUARY, 1979, WE ARE MOVING TO
ROYALTY HOUSE, 72 DEAN STREET, W.1. 734 0152/6

KNIGHT PROGRAMMING SUPPORT LIMITED

OFFICES: AMSTERDAM PARIS MANCHESTER BIRMINGHAM

£9000

AREA DEVELOPMENT MANAGER SURREY

Your client is an international manufacturing company with associate companies throughout Europe. They retain IBM 370 under both DCE & CICS and have extensive telecommunications network for voice, message and data linking the UK, Holland and USA. The successful candidate will have responsibility for both US and Dutch operations, provide effective liaison for information services and management of local contractors. Part of role will be evaluation and advice on new hardware so familiarity with current hardware technology and related telecommunications equipment is a must.

• Excellent career prospects

• Subsidised residential sports and social club

• Location in rural and pleasant park grounds

• Relocation expenses

REF 1926

£8500

EDP AUDIT LONDON

Our client is a British based banking group involved in developing applications both in U.K. and overseas. A highly motivated professional is needed to undertake formal audits of world wide network of data centres to undertake system reviews, propose improvements, development, participation in the design of systems development, front project initiation through to just running and formal sign off. Also EDP audit/review programs for planning, systems and assistance to field units. Good experience in data processing, extensive to IBM, and preferable PDP 10 line experience and varied audit/review program and/or programming knowledge COBOL or BASIC + Co. offers:

- Subsidised mortgage
- Housing scheme
- Non-contributory pension scheme
- Unusual scope for career development

REF 2005

SENIOR SYSTEMS ANALYST LONDON

Excellent opportunity exists for a senior systems analyst to work within an international company providing banking, insurance and real estate systems. Good applicants will have significant IBM experience in a banking or financial organization and experience of investment accounting as he/she will play an important role in major systems of this type. If you wish to work in a progressive and stimulating environment phone 01-9291

- Friendly atmosphere
- Subsidised residential sports and social club
- Non-contributory life assurance scheme
- Up to date UV's

REF 1954

£8000

PROJECT LEADER LONDON

With two clients in the U.K. and Client 1, a large group of companies has business interests in the U.K. and overseas specialising in the provision of a wide range of products and services to various industries and organisations. Retaining PDP 10s and seek person with a good programming background and at least 12 months as a project leader with one project handled from design to implementation. This is a responsible position for someone who wishes to enhance their career development. Co offers:

- Opportunities for promotion to manager with a company car
- Working on a wide range of applications, including micros, mini and mainframes

REF 1987

ANALYST PROGRAMMER LONDON

Enhance your career, this is a fantastic opportunity to join a major oil company. If you have good IBM experience programming in COBOL and ASSEMBLER or MARK IV and over 2 years' IBM systems analysis experience! If so our client, a large insurance and reinsurance corporation, would like to discuss your future. Rapid career progression and lots of client liaison. Co offers:

- Free life assurance
- Free BUPA
- Sports and social club
- Subsidised staff restaurant and luncheon vouchers
- Regular salary reviews

REF 1983

SYSTEMS ANALYSTS SURREY

Unique opportunity exists within this multi-national communications conglomerate retaining large PDP minis. Company is currently engaged in the development of major international message switch using MACRO II. Ideal applicants should have 5 years experience in Real Time programming in Macro Assembler and RSX with message switch experience and some knowledge of the above plus the ability to lead a small team phone NOW! Co offers:

- Up to date technology
- Regular salary reviews
- Excellent career structure

REF 2006

£7K

SENIOR PROGRAMMER CITY

Due to expansion this bank has an opening for a programmer with at least 4 years' ASSEMBLER experience to work on IBM 370 which runs under DOS/VS. This is a very varied position which involves many tasks and interesting projects relating to international finance. If you have the right experience and strong will to succeed then apply NOW. Co offers:

- Subsidised Mortgage
- Loan Scheme
- Annual Bonus
- Non-contributory pension scheme
- Excellent prospects for promotion

REF 1986

SENIOR PROGRAMMER MIDDX

Our client, a computer bureau of well-known international repute, seeks senior programmers to develop and work on various new accounting packages. Ideal applicant will have at least 3 years' programming in COBOL on IBM hardware. There is a unique opportunity to follow career path, there are awaiting delivery of 3033 in March and lots of new development work is planned. Co offers:

- Flexitime
- Standardised development in well planned schedule
- Proprietary organisation
- Plenty of room for growth and excellent earning potential

REF 1989

PROGRAMMER N. LONDON

Major manufacturing company are setting up new installations in the U.K. and overseas and seeks systems analysts to be responsible for various project teams. Hardware consists of 2 ICL 2900's linked to their other installations. This is an excellent opportunity for the beginning of a fantastic career prospects. They will also consider experienced programmers to train in systems analysis. Co offers:

- MORTGAGE SUBSIDY
- Relocation expenses
- Non-contributory pension scheme
- Personal Loan Scheme

REF 1986

SYSTEMS ANALYSTS BUCKS

As a wholly-owned subsidiary company of one of the largest firms of chartered accountants in the U.K., they require a programme writer who has at least 2 years' programming in RPG III. They retain IBM 370 equipment their position is for persons with approx. 3 years' IBM COBOL experience and to begin training in systems analysis. Co offers:

- COMPUTER CAR
- Weekly holiday
- Non-contributory pension and sickness schemes
- Excellent career prospects

REF 1988

SENIOR PROGRAMMER CITY

Our client, a major American company engaged in the production and marketing of electronic equipment, requires a programme writer who has at least 2 years' programming in RPG III. They retain IBM 370 equipment their position is for persons with approx. 3 years' IBM COBOL experience and to begin training in systems analysis. Co offers:

- COMPUTER CAR
- Weekly holiday
- Non-contributory pension and sickness schemes
- Excellent career prospects

REF 1947

KNIGHT PROGRAMMING SUPPORT LIMITED

ROYALTY-HOUSE, 72 DEAN STREET, LONDON, W.1. TEL: 01-734 0152 (2 LINES)

OFFICES: AMSTERDAM PARIS MANCHESTER BIRMINGHAM

